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Foreword

This country's transportation network of highways, aircraft, railroads, pipelines, and ships is critical not only to Americans' personal mobility and U.S. economic growth but also to the nation's ability to compete in a global environment. Americans spend a total of \$800 billion annually—almost 19 cents of every consumer dollar—for transportation products and services. To help ensure that the transportation network is safe, functional, and environmentally sound, the annual federal transportation budget has grown to over \$30 billion.

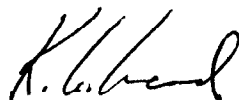
The U.S. transportation system, although the world's finest, faces a number of challenges. Transportation-related accidents result in almost 50,000 deaths annually. Considerable portions of the transportation infrastructure are obsolete or deteriorating. The aviation, highway, and waterway systems are increasingly congested. Demands are increasing for more and better public transit and rail service domestically and for strengthening American transportation to become more competitive globally. And concerns are growing about transportation-related environmental effects and the effectiveness of transportation security practices. Such challenges will continue to influence safety, economic, and other public policy decisions affecting transportation during the 1990s.

This index provides summaries of 221 U.S. General Accounting Office (GAO) products—153 reports and 68 testimonies—related to transportation that were issued from January 1989 through April 1991. The summaries are grouped, chronologically by reports and testimonies, under 11 topical categories: aviation safety, airport and airway system improvement, surface transportation safety, surface transportation infrastructure, competition and consumer protection, Coast Guard and Maritime Administration efficiency and effectiveness, cross-modal transportation issues, Saint Lawrence Seaway Development Corporation, Railroad Retirement Board, other transportation-related matters, and special publications. The form at the back of the index lists the publications under each topical category and generally in the order in which the summaries appear.

The index should be useful for general information and research purposes and for identifying transportation issues that GAO has addressed. For information on GAO products on transportation matters issued from 1985 through 1988, please refer to the Transportation Bibliography cited in the Special Publications section of this index.

Questions may be directed to me at the U.S. General Accounting Office, Room 1842, 441 G Street, NW, Washington, D.C. 20548, (202) 275-1000.

Readers interested in ordering documents or in requesting bibliographic searches on a specific topic should call the GAO Document Handling and Information Service, (202) 275-6241. The form included in the back of the index may also be used to order documents.

A handwritten signature in dark ink, appearing to read 'K. Mead', is positioned above the typed name.

Kenneth M. Mead, Director
Transportation Issues
Resources, Community, and
Economic Development Division

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Aviation Safety

Aviation Safety

FAA Training: Continued Improvements Needed in FAA's Controller Field Training Program

GAO/RCED-89-83, 3/29/89

The Federal Aviation Administration (FAA) is responsible for training over 16,000 air traffic controllers annually at about 240 field facilities. GAO found that (1) on-the-job training provided to developmental controllers at field facilities is not standardized, despite recent FAA efforts to make it more uniform; (2) full performance level controllers are receiving only limited training to maintain and upgrade their knowledge and skills; (3) FAA does not maintain sufficient data to oversee controller field training; and (4) FAA has not evaluated contractor-provided training at en route centers. FAA recognizes the need to improve its field training programs, and in August 1988 it announced a series of initiatives to improve controller training. Although these initiatives should strengthen FAA's training programs, additional changes are needed to improve both FAA's implementation and oversight of controller field training.

Aviation Safety: FAA Action Plan for Chicago O'Hare International Airport

GAO/RCED-89-114, 4/19/89

Recruiting, retaining, and training controllers at Chicago O'Hare International Airport have been long-standing problems, and much of the equipment that supports operations is aging or difficult to maintain. The Federal Aviation Administration is making a concerted effort to improve the situation, and its actions have reduced some of O'Hare's personnel problems. However, the impact of all action plan initiatives to improve staffing, training, and equipment will not be known for some time.

Aviation Safety: Serious Problems Continue to Trouble the Air Traffic Control Work Force

GAO/RCED-89-112, 4/21/89

The perceptions of controllers, supervisors, and managers in 1988 show little change from those reported in GAO's 1985 survey (GAO/RCED-86-121,

3/6/86). Despite changes the Federal Aviation Administration has made over the years, little overall improvement in work force attitude has occurred. In addition, a comparison of controllers' and facility managers' views illustrates the vast differences that exist in their perceptions of the work environment. To a lesser extent the gap is also evident between supervisors and managers. Specifically, controllers and their supervisors saw a shortage of developmental and full performance level controllers. Controllers were concerned that they typically handle too much traffic during peak periods of operation and are often required to work too long during these periods without a break. Managers agreed that there was a shortage of controllers; however, they did not believe that controllers handle too much traffic or work too long without a break. Whereas over 40 percent of controllers viewed their own morale as low, most managers did not perceive controllers' morale to be low. A majority of controllers believed that the quality of training for developmental controllers in several essential areas is inadequate. Facility managers do not agree. Although no quantitative assessment of safety can realistically be made, the results of this survey (for which individuals' responses are confidential) do provide a unique perspective on the air traffic control system.

Aviation Safety:
Conditions Within the Air Traffic Control Work Force

GAO/RCED-89-113FS, 4/24/89

This fact sheet supplements the work summarized in GAO's report about problems affecting the air traffic control work force (GAO/RCED-89-112). GAO compared the complete 1988 questionnaire responses of air traffic controllers, supervisors, and facility managers with those of the 1985 survey. In summary, the perceptions of the air traffic control work force (whose individual responses are confidential) have changed little since the 1985 survey.

Aviation Safety:
Comparison of Specific Responses in FAA Controller Questionnaire

GAO/RCED-89-162FS, 5/24/89

This fact sheet supplements the work contained in earlier GAO reports concerning conditions within the air traffic control work force. For certain questions, it shows how air traffic controllers who responded to one question answered a second question. For example, one section shows

how controllers who responded to the question about how much traffic they handled during typical daily peak periods answered two other survey questions. Another section shows how controllers who answered a question that rated system safety responded to seven survey questions.

**Air Traffic Control:
FAA's Interim Actions to Reduce Near Mid-Air Collisions**

GAO/RCED-89-149, 6/30/89

The Federal Aviation Administration (FAA) defines a near mid-air collision (NMAC) as either an incident in which the possibility of collision occurs as a result of an aircraft's proximity of less than 500 feet to another aircraft or an official report from an air crew member stating that a collision hazard existed between two or more aircraft. The degree to which NMAC reports can be relied on as an indicator of overall system safety is limited because much of the data is subjective and only those incidents reported are known. GAO found that for calendar years 1986 through 1988, a total of 2,610 NMACs were reported to FAA. Commercial carriers were involved in 1,158 of these reported incidents. FAA has implemented many actions to reduce the risk of mid-air collisions in recent years. For example, additional equipment is required on planes, controllers have been provided enhanced hardware and software, and special airspace designations have been made at more airports. Within the past several years, FAA's attempts to assess the effectiveness of various actions taken by analyzing NMAC data have been met with mixed success.

**Air Traffic Control:
Computer Capacity Shortfalls May Impair Flight Safety**

GAO/IMTEC-89-63, 7/6/89

The Federal Aviation Administration (FAA) is responsible for the safe, orderly, and expeditious flow of civilian and military aircraft. FAA uses computer, radar, and communications systems to help accomplish this mission. Numerous reports of near mid-air collisions occur annually, especially in airspace near airports. Existing computer capacity shortfall at some large, busy terminal radar approach control (TRACON) facilities are impairing controllers' ability to maintain safe separation of aircraft. Many TRACONS reported instances in which aircraft position and identification information disappeared from controllers' displays, data

flickered on the displays, and computer responses to controllers' attempts to update or request data were delayed. FAA should take action to ensure that capacity shortfalls do not interrupt critical air traffic control functions.

Aviation Safety:

FAA Has Improved Its Removal Procedures for Pilot Examiners

GAO/RCED-89-199, 9/8/89

Although the Federal Aviation Administration (FAA) is responsible for ensuring that pilot certificates are issued to only safe and competent pilots, it has delegated most of its authority and responsibility for issuing certificates to private, non-FAA personnel called pilot examiners. In examining FAA's process for removing pilot examiners who are not satisfactorily carrying out their duties, GAO found that FAA lacked adequate guidance to ensure the protection of a pilot examiner's due process rights during removal. This lack of adequate guidance made it difficult for FAA to remove pilot examiners who had used unacceptable pilot certification practices. These unacceptable practices, such as improper flight testing, seriously compromise assurances that only safe and competent pilots receive pilot certificates. GAO could not determine the number of pilot examiners that FAA had attempted to remove or how many challenged the removal, because FAA district offices do not maintain such data. GAO brought the potential safety implications of the issues to FAA's attention. In June 1989, FAA issued revised procedures for removing pilot examiners who are not performing satisfactorily. Although GAO cannot predict whether courts will find that these procedures satisfy due process concerns, the new procedures do address issues raised in court decisions.

Aviation Training:

FAA Aviation Safety Inspectors Are Not Receiving Needed Training

GAO/RCED-89-168, 9/14/89

The Federal Aviation Administration's (FAA) aviation safety inspectors are the core of the FAA safety team responsible for carrying out almost every facet of aviation, including the certification of aircraft, pilots, and mechanics. FAA inspectors are not receiving the training that FAA's managers say they need to effectively perform their assigned jobs. In 1988 less than 40 percent of the operations inspectors received the flight training that FAA says they must have to perform pilot flight checks, and

airworthiness inspectors received less than 50 percent of the training that FAA said they needed. Although FAA has several initiatives under way, further improvements are needed in the aviation safety inspector training program.

Aviation Safety:
Chicago Center Work Force Views of the Air Traffic Control System

GAO/RCED-89-205FS, 9/28/89

This fact sheet highlights the differences in views between the controllers and supervisors surveyed at the Chicago air traffic control center and those surveyed at all centers. In summary, Chicago center controllers and supervisors are generally more concerned than those at other centers about the extent and quality of developmental controllers' skills and training. At the same time, they are less concerned about meeting the need for controllers in the future because of the number of developmental controllers they already have. Like other controllers, Chicago center controllers expressed concern about working conditions, including too few full performance level controllers; too much work; too little overtime to cover training, leave, and other duties; inadequate quality of developmental training; and low morale. Additionally, they viewed airlines and pilots as contributing to controller difficulty and rated factors that made it difficult to keep the air traffic system safe. Supervisors shared many of the controllers' concerns.

Aviation Safety:
Information on FAA's Age 60 Rule for Pilots

GAO/RCED-90-45FS, 11/9/89

GAO looked at the Federal Aviation Administration's (FAA) regulation—known as the "Age 60 Rule"—prohibiting individuals age 60 or over from piloting large commercial aircraft. This fact sheet provides information on (1) the history of the rule; (2) exemption requests, including the number filed and granted; (3) the number of "special issuance" medical certificates granted to pilots under age 60; and (4) studies on the rule. A list of the major court cases that FAA identified as involving the Age 60 Rule is also provided.

Aviation Safety:
FAA's Safety Inspection Management System Lacks Adequate Oversight

GAO/RCED-90-36, 11/13/89

Recent airline accidents involving aging aircraft or pilot training problems have focused attention on the Federal Aviation Administration's (FAA) safety inspection program. GAO evaluated FAA's internal controls and management practices to see if its national work program guidance on inspection requirements was being followed by FAA staff at district offices that do the inspections. GAO found that FAA has not provided adequate supervision, as required by government standards for internal controls, to ensure that its policies are being followed by the local staff who implement those policies. Furthermore, because of inaccurate and unreliable data, FAA cannot guarantee the reliability of the information in its annual reports to the Congress. In its latest report, FAA told the Congress that it had completed over 80 percent of the inspections required by the national inspection work program and had internal controls in place to ensure the integrity of the inspection program. However, GAO found that of the 1,117 inspections required of its sample of pilots, aircraft, and maintenance bases, only 500 had been entered into the computer base as program goals.

Aviation Safety:
Facility Ranking of Controller Survey Responses

GAO/RCED-90-39, 11/21/89

This report ranks, in order from most negative to least negative, the largest air traffic facilities on the basis of controllers' views of their working conditions, training, safety, and morale. Controllers are troubled by working conditions at air traffic control facilities. The extent of their concern varied among facilities and on the basis of specific working conditions. Overall, controllers at the Boston and Washington centers had the most negative survey views of working conditions, training, safety, and morale, whereas those at the Albuquerque, Houston, and Minneapolis centers had the least negative views. Similarly, controllers at 12 terminals (including Boston, Kennedy, Orlando, and Washington National) had the most negative views, whereas controllers at another 11 terminals (including Jacksonville, Lubbock, Sacramento, and Tampa) had the least negative views.

**Aviation Security:
Training Standards Needed for Extra Security Measures at Foreign
Airports**

GAO/RCED-90-66, 12/15/89

GAO analyzed the security changes the Federal Aviation Administration (FAA) has made in the wake of the explosion of Pan Am Flight 103 over Lockerbie, Scotland, in December 1988. Despite the imposition of additional security measures, airlines at high-risk foreign airports may not be properly carrying out required procedures. FAA has found deficiencies in the way airline security personnel were carrying out the extra security measures. GAO believes that these deficiencies occurred largely because FAA has not established minimum training requirements and standards for the extra security measures required at high-risk overseas airports. These standards are needed to ensure that airline personnel are sufficiently trained to carry out required security measures. Moreover, FAA did not routinely evaluate formal airline security training at these airports. FAA has, however, begun examining the training and testing of host government security personnel who screen passengers and baggage at high-risk foreign airports. GAO believes that FAA needs to do the same for U.S. airline security personnel charged with carrying out extra security procedures at these airports.

**Aging Aircraft:
FAA Needs Comprehensive Plan to Coordinate Government and
Industry Actions**

GAO/RCED-90-75, 12/22/89

As a result of the April 1988 Aloha Airlines tragedy, the Federal Aviation Administration (FAA) sponsored an international conference on aging aircraft in June 1988. In GAO's opinion, this conference provided a clear statement of the aging aircraft problem and developed a reasonably complete series of recommendations. In October 1989, FAA held a second conference to discuss progress since the 1988 conference. Although this conference did not produce additional recommendations, participants continued to believe that older aircraft warrant close scrutiny. GAO believes that the critical nature of the aging aircraft issue demands that a plan be developed within which FAA could (1) coordinate the timing and results of current and future initiatives and (2) evaluate and incorporate the resource implications of those initiatives. A plan would also facilitate oversight of the many long-term government/

industry initiatives generated by the June 1988 conference—such as recommended modifications of Boeing and McDonnell Douglas aircraft—and would allow the Congress to promote more accountability within FAA and the industry.

Aviation Safety:
FAA Is Considering Changes to Aviation Medical Standards

GAO/RCED-90-68FS, 1/9/90

The safety of millions of aircraft passengers depends, in part, on the skills and medical fitness of an aircraft's crew. The Federal Aviation Administration (FAA) requires pilots, flight navigators, and flight engineers to have periodic medical evaluations by an FAA-approved physician. This fact sheet describes the nature and status of revisions FAA is considering for aviation medical standards in the following categories: visual acuity; ear, nose, throat, and equilibrium; mental and neurological; cardiovascular; and general medical conditions.

Aviation Safety:
Management Improvement Needed in FAA's Airworthiness Directive Program

GAO/RCED-90-94, 2/16/90

In several reports, GAO has looked at the Federal Aviation Administration's (FAA) ability to provide meaningful oversight of aviation safety. This report focuses on FAA's oversight of the airworthiness directive program. Airworthiness directives—key elements of FAA's safety responsibility—are rules that FAA issues requiring airlines to correct conditions in their aircraft, such as cracking and corrosion, that are potential safety hazards. GAO found that FAA's oversight of the program is inadequate to determine whether the airlines are complying with airworthiness directives. FAA inspectors do not, and are not required to, verify compliance during each inspection. Even when airworthiness directive compliance is checked, current guidance requires inspectors to report only noncompliance. FAA needs to measure the extent of noncompliance and decide what actions it should take to ensure compliance with airworthiness directives throughout the airline industry. In addition to obtaining more complete and comprehensive information from its safety inspectors, FAA should analyze its existing safety data bases to help focus airline inspections on problem areas, thereby improving the effectiveness and efficiency of FAA's limited inspector work force.

**Aircraft Maintenance:
Potential Shortage in National Aircraft Repair Capacity**

GAO/RCED-91-14, 10/31/90

The Federal Aviation Administration recently mandated repairs and modifications to aging aircraft. Because about one-third of the U.S. fleet could need major repairs within 4 years, GAO is concerned that demand for aircraft maintenance could exceed the aircraft repair industry's short-term capacity. This demand could result in some carriers taking aircraft in need of maintenance out of service until maintenance could be scheduled, thereby adversely affecting air fares and schedules. As part of GAO's review of the U.S. aircraft repair station industry, this interim report discusses (1) reasons for recent increases in demand for maintenance, (2) the extent to which the industry's capacity is being used, and (3) the factors affecting future demand for and supply of airline and independent repair station services.

**Aviation Safety:
Changes Needed in FAA's Service Difficulty Reporting Program**

GAO/RCED-91-24, 3/21/91

The Federal Aviation Administration's (FAA) Service Difficulty Reporting (SDR) program is intended to help airline and FAA personnel to promptly correct conditions that could adversely affect air safety. FAA does this by disseminating a weekly compilation of reports on aircraft malfunctions—primarily to airline and FAA personnel. GAO's review focused on the portion of the program that handles large, airline-operated aircraft, not on general aviation (small, private aircraft or commercial aircraft carrying less than 30 passengers). The evaluation covered the usefulness of SDR data to FAA and airline personnel, factors affecting the SDR programs' usefulness, and changes needed to improve the program. According to FAA and airline personnel, the data are of little value because they are virtually never the first source for identifying safety problems in transport aircraft. In their view, without major improvements, the SDR program should not be continued. According to GAO, several factors stemming primarily from FAA's management inattention limit the program's usefulness. These factors are as follows: (1) information that one airline considers reportable may go unreported by another airline; (2) useful information does not reach subscribers for over 6 weeks because of delays in manual data processing through a paper-based system; and (3) FAA does not analyze the data, as required

by FAA policy, to detect malfunction trends in specific aircraft models or focus the efforts of FAA's inspection work force because of insufficient staff and unreliable data.

FAA Staffing:

New Pay Act Offers Options to Bolster Maintenance Work Force

GAO/RCED-91-92, 4/2/91

This report, which follows up on a 1987 report (GAO/RCED-87-137), discusses (1) whether shortages in the Federal Aviation Administration's (FAA) maintenance technician work force have adversely affected air traffic control (ATC) operations and (2) FAA's plans to increase its maintenance capability. Since the 1987 report, FAA has hired new staff to replace retired technicians. However, because the lengthy training period for new technicians (3 to 5 years) and an increasing work load reduced the agency's maintenance capability, FAA also took other measures, including using contract personnel, to preserve a reliable ATC system. Consequently, although some operational problems have occurred, overall system reliability and safety have not greatly deteriorated. FAA is proposing to spend about \$118 million between fiscal years 1992 and 1996 to supplement its in-house maintenance technician work force with contractor personnel. However, during roughly the same period (1991-95), FAA expects its maintenance work load to decline, and since FAA developed its proposal, the Congress authorized other financial incentives under the Federal Employees Pay Comparability Act of 1990 that may help FAA bolster technician staffing. Accordingly, GAO believes that an evaluation of additional personnel requirements in light of new developments would provide FAA with a basis for determining the proper combination of contractor and federal employees if additional staff is needed.

Aviation Safety:

Limited Success Rebuilding Staff and Finalizing Aging Aircraft Plan

GAO/RCED-91-119, 4/15/91

GAO provides information on the Federal Aviation Administration's progress in (1) rebuilding the air traffic controller and aviation safety inspector work forces and (2) developing a plan to address aging aircraft problems. As of September 1990, FAA employed 17,200 controllers, a level comparable to that at the time of the 1981 strike. However, the overall number of full performance level (FPL) controllers remained

about 2,400 below prestrike levels. Although FAA is adding about 500 FPLs each year, it will not achieve prestrike FPL controller capability for several years. GAO also discusses (1) the limited success, after 2 years, of FAA's 5-year pay demonstration project to encourage experienced controllers to relocate to or remain at some of its busiest facilities and (2) FAA's efforts to explore alternatives to the way it screens and trains new controllers in order to resolve the long-standing problem of failures at the FAA Academy. On the matter of its aviation inspector work force, FAA is increasing the size of the force—to 2,577 as of September 1990—but FAA officials believe that this work force is unlikely to increase much beyond 3,000. Consequently, FAA needs to use its current inspectors more effectively and provide them with better training. On the matter of aging aircraft, FAA has worked closely with the aviation community to address aging aircraft concerns, but it has yet to complete a comprehensive plan to guide industry and government efforts to address this critical aviation issue. Its draft plan does not address several key issues that are vital to enhancing the safety of aging aircraft.

Testimony

Serious Problems Continue to Trouble the Air Traffic Control Work Force, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation. GAO/T-RCED-89-44, 5/25/89

This testimony summarizes GAO's 4/21/89 report entitled Aviation Safety: Serious Problems Continue to Trouble the Air Traffic Control Work Force (GAO/RCED-89-112), which is described above.

Changes to Airline Security Practices After Pan Am 103, by Victor S. Rezendes, Associate Director for Transportation Issues, before the Subcommittee on Government Activities and Transportation, House Committee on Government Operations. GAO/T-RCED-89-68, 9/26/89

This testimony, which was presented in an executive session of the Subcommittee, is not available for public dissemination because it may contain information that the Federal Aviation Administration considers sensitive and prohibited from public disclosure pursuant to 14 C.F.R. 191. However, the findings, with appropriate changes for public disclosure, are discussed in Aviation Security: Training Standards Needed for Extra Security Measures at Foreign Airports (GAO/RCED-90-66, 12/15/89), which is described above and which is available to the public.

Meeting the Aging Aircraft Challenge: Status and Opportunities, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation, GAO/T-RCED-89-67, 9/27/89; and before the Subcommittee on Aviation, House Committee on Public Works and Transportation, GAO/T-RCED-90-2, 10/10/89

These testimonies focus on (1) the status of the many actions taken by the Federal Aviation Administration (FAA) and the aviation industry to respond to the aging aircraft problem and (2) several opportunities for FAA to deal more actively with emerging aircraft maintenance problems. GAO concludes that although generally reasonable steps are under way to identify and solve the aging aircraft problem, FAA needs to develop a long-term plan for ensuring proper continuation of and accountability for those steps. GAO also believes that a follow-up system is needed to ensure that appropriate actions have been taken and progress made by all concerned parties. Although FAA could use its resources more effectively, its need for more staff should also be considered.

Proactive Management of FAA's Security Program Needed, by Kenneth M. Mead, Director of Transportation Issues, before the President's Commission on Aviation Security and Terrorism. GAO/T-RCED-90-20, 12/18/89

This testimony summarizes GAO's 12/15/89 report entitled Aviation Security: Training Standards Needed for Extra Security Measures at Foreign Airports (GAO/RCED-90-66), which is described above.

Staffing, Training, and Funding Issues for FAA's Major Work Forces, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-90-42, 3/14/90

Several times over the past few years, GAO has reported that the Federal Aviation Administration (FAA) needs to improve its hiring and training of three work forces critical for air safety—air traffic controllers, aviation safety inspectors, and maintenance technicians. In this testimony, GAO reiterates some of its concerns and discusses a range of needed management improvements. Although FAA has made progress in developing adequately trained work forces, GAO is concerned that the scope and cost of this undertaking are still not fully appreciated. A high level of air safety demands a commitment not only to fund increases in the controller, inspector, and field-maintenance work forces but also to train

these work forces adequately to do their jobs. FAA senior management needs to continue its commitment to address emerging human resource issues, as well as initiatives already begun.

Observations on H.R. 3774, "The Aging Aircraft Safety Act of 1989," by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-90-82, 5/23/90

H.R. 3774 (101st Cong.) is intended to reduce the safety risk of older aircraft and thus raise the public's confidence in the safety of the U.S. transport fleet. The bill would require all planes, within a year of reaching a specific age based on usage or the passage of time, to be removed from service in order to receive a safety inspection. GAO agrees that if an older aircraft is to remain in commercial service, its maintenance record and structural integrity must be carefully examined. The Federal Aviation Administration, however, will not be able to perform these inspections alone; it will need the resources and support of the manufacturers and major air carriers. GAO believes that focusing first on the oldest or most used aircraft in an orderly, scheduled fashion would minimize disruption of the air travel industry. At the same time, it would help reduce the risk of an air tragedy resulting from structural fatigue or corrosion.

Serious Shortcomings in FAA's Training Program Must Be Remedied, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, GAO/T-RCED-90-86, 6/6/90; and before the Subcommittee on Transportation, Aviation, and Materials, House Committee on Science, Space, and Technology, GAO/T-RCED-90-91, 6/21/90

A safe and efficient air traffic control system depends on well-trained Federal Aviation Administration (FAA) staff. GAO testified, however, that FAA's training program is not meeting the needs of employees and that FAA has made little progress in modernizing its training. GAO discussed training of FAA's safety-related work forces—air traffic controllers, aviation safety inspectors, and maintenance technicians. In light of FAA's extraordinary training needs and of impairments in air traffic safety associated with deficiencies in safety-related work force training, GAO urges that FAA begin to resolve these issues now. GAO believes that further delay will only increase the potential for safety-related problems.

Airport and Airway System Improvement

Airport and Airway System Improvement

Computer Procurement:

FAA's \$1.5-Billion Computer Resources Nucleus Project

GAO/IMTEC-89-44FS, 3/31/89

In February 1989, the Federal Aviation Administration issued a request for proposals for its largest and most complex general-purpose data-processing acquisition to date: the Computer Resources Nucleus (CORN) project. This \$1.5 billion project is intended to meet the agency's general-purpose data-processing needs for up to 10 years in the following mission and program areas: airport and aviation activity; air traffic control and airspace; aviation safety; national airspace system facilities; financial, materiel, and human resources; and management support. CORN is intended to cover an initial 5-year implementation period, followed by five 1-year renewals. The agency anticipates that the contract will be awarded in late September 1989.

Aviation Research:

Information on FAA's Research, Engineering, and Development Program

GAO/RCED-89-122FS, 4/12/89

The objective of the Federal Aviation Administration's (FAA) Research, Engineering, and Development (RE&D) program is to improve the nation's air transportation system by increasing its safety, productivity, and capacity to meet the expected air traffic demands of the future. FAA has obligated \$158 million, \$150 million, and an estimated \$165 million for RE&D for fiscal years 1987 through 1989, respectively. This fact sheet provides tabular information on the funding, staffing, and scheduling for FAA's RE&D subprograms.

Aircraft Noise:

Status and Management of FAA's West Coast Plan

GAO/RCED-89-84, 5/8/89

In 1985 the Federal Aviation Administration (FAA) identified the West Coast states as an area in which improvements were needed in air traffic management. Two major, interrelated problems were (1) costly delays caused by air traffic congestion and (2) greatly increased growth in air route traffic, which created congestion. The West Coast Plan is a major effort to increase airspace capacity, reduce flight delays, and

enhance air safety in the western United States. The Plan's projects involve installing new navigational aids, enhancing the efficiency of FAA-controlled airspace in the vicinity of airports in the Los Angeles basin, establishing new high-altitude air routes in the western United States, and increasing arrival capacity at San Francisco Airport. FAA estimates the total West Coast Plan cost to be about \$143 million. Project implementation has been staggered: three projects are complete; others are now being implemented; and others—in particular, the facility consolidation in Los Angeles—will not be fully implemented until 1994.

**Air Traffic Control:
Voice Communications System Continues to Encounter Difficulties**

GAO/IMTEC-89-39, 6/1/89

The Federal Aviation Administration's (FAA) Voice Switching and Control System (VSCS) is a major system development intended to improve communications at air traffic control facilities. VSCS has encountered continued cost, schedule, and technical difficulties primarily because both FAA and the two prototype development contractors underestimated the amount of work needed to meet system requirements. Total project cost estimates through system implementation have more than tripled, from \$258 million in 1982 to over \$786 million. The program has also encountered schedule slippages of up to 6 years since the 1982 schedule estimate. In addition, both prototype contractors continue to have difficulties designing hardware and software capable of meeting system performance requirements.

**Air Traffic Control:
FAA's Implementation of Modernization Projects in the Field**

GAO/RCED-89-92, 6/28/89

The National Airspace System Plan is the largest segment of the Federal Aviation Administration's (FAA) air traffic control modernization program. GAO's review of nine projects in five of FAA's nine regions found that (1) headquarters plans inadequately defined requirements and time frames for the regions and (2) facility designs for accommodating the new equipment in some cases were not ready. Because of the planning and information management problems, the tasks and staffing required to complete implementation were not accurately defined. Unless these problems are corrected, FAA cannot assure the Congress either that

established implementation milestones can be met or that staffing levels are adequate to meet such milestones.

**Aircraft Noise:
Eight Airports' Efforts to Mitigate Noise**

GAO/RCED-89-189, 9/14/89

Aircraft noise has become a significant national issue that threatens the continued growth of airports and their ability to serve the growing demands of the air transportation industry. This report, which is based on case studies of eight major airports in Atlanta, Baltimore, Chicago, Los Angeles, Memphis, Minneapolis-St. Paul, Philadelphia, and San Francisco, notes that in trying to reduce the effect of noise, airports have had to balance the conflicting needs and desires of surrounding communities with (1) regional, airline, and airport desires for growth and (2) the Federal Aviation Administration's responsibilities for maintaining a safe, efficient, and competitive air transportation system. In addition, airports have been hindered in solving their noise problem by their lack of control over the land surrounding them and their dependence on local communities and states to cooperate in implementing land control measures, such as zoning. Overall, according to airport officials and GAO's analysis of the airports' noise abatement programs, no quick or simple solution to the aircraft noise problem exists. Compromise among the conflicting interests of communities, airlines, and airports is often the only avenue to alleviate the problem.

**Air Traffic Control:
FAA Needs to Implement an Effective Testing Program**

GAO/IMTEC-89-62, 9/22/89

In reviewing the Federal Aviation Administration's (FAA) program for testing the systems and equipment it procures for controlling air traffic, GAO found that the success of this program has been limited because (1) the 1986 order containing FAA's test policy did not establish how users were to be involved in testing systems and equipment and (2) FAA did not implement effective controls to ensure compliance with this order. The effectiveness of the test program has also been impaired because the group responsible for oversight of the testing program is not independent of developers and users, as recommended by federal policy. The absence of an effective agency testing program has allowed projects to move into production without sufficient testing and has contributed

to scheduling delays of 1 to 8 years. The lack of testing has also led to the deployment of systems before key safety and reliability issues have been addressed. FAA issued a new test order in February 1989 that, if properly implemented, can correct some of the shortcomings associated with the test program. However, the new order does not require an independent test and evaluation group.

Aviation Weather:

FAA Needs to Resolve Questions Involving the Use of New Radars

GAO/RCED-90-17, 10/12/89

The Federal Aviation Administration (FAA) is developing three systems to enhance its ability to disseminate hazardous weather information to pilots. The availability of weather information from these systems is vital to the safety of aviation. In 1986, the most recent year for which data were available, weather was cited as a factor in almost 44 percent of all major airline accidents. GAO's report describes FAA's progress in preparing operational procedures for using and disseminating weather information from the Airport Surveillance Radar weather channel and the Terminal Doppler Weather Radar. The report also assesses the status and availability of initial weather services from the Aeronautical Data Link.

Aviation:

FAA's Use and Management of Communications Resources

GAO/IMTEC-90-8, 1/24/90

Communications resources, which include transmission systems and the equipment connecting information senders and receivers, are vital to the Federal Aviation Administration's (FAA) promotion of the safe, orderly, and expeditious flow of air traffic. As FAA increases its ownership of communications resources—FAA estimates that it will need \$2.7 billion through the 1990s to develop and purchase communications—it must carefully manage and control them. Although FAA established an organization in 1987 to centralize its management of communications resources, this entity lacks control over many key communications functions, including systems engineering, procurement and deployment of owned resources, and real-time operations and maintenance, all of which are the responsibility of other FAA components. GAO believes that without greater consolidation of communications responsibilities or enough coordination, the potential exists for significant problems with

equipment compatibility, system integration, and network monitoring and control. FAA recognizes the negative consequences of these problems and is considering improving its communications management as part of a new strategic telecommunications plan. GAO believes that timely completion of this plan should help FAA to effectively control these critical resources.

**Air Traffic Control:
Status of FAA's Effort to Modernize the System**

GAO/RCED-90-146FS, 4/17/90

This fact sheet provides information on the status of the Federal Aviation Administration's air traffic control modernization program. By replacing computers, increasing automation, consolidating facilities, and upgrading navigational aids, this program seeks to achieve a significantly safer and more efficient air traffic control system while limiting costs incurred by the government and airspace users. GAO looked at (1) the program's overall status in terms of projects completed and funds allocated and (2) the projected cost and schedule of the program's 12 major systems as of January 1990.

**FAA Procurement:
Major Data-Processing Contract Should Not Be Awarded**

GAO/IMTEC-90-38, 5/25/90

In February 1989, the Federal Aviation Administration (FAA) requested proposals for its largest and most complex general-purpose data-processing acquisition to date: the Computer Resources Nucleus (CORN) project. At an estimated cost of \$1.5 billion, CORN is intended to meet the agency's needs for 10 years and provide options for supporting the processing needs of other parts of the Department of Transportation. GAO found that the CORN project has not been properly justified and planned and that it contains major unresolved problems. FAA's claims about the causes of perceived problems with its current system are poorly supported, as is its projection of future needs, leading to fundamental doubts about the project's justification. In addition, the agency's methodology for evaluating technical and cost aspects of vendor proposals is seriously flawed, and FAA's estimates of the costs for converting software to CORN and the amount of agency support needed for the conversion are unreliable. Finally, the conversion itself will not

result in better management information. GAO recommends that the COR contract not be awarded.

**Air Traffic Control:
Ineffective Management Plagues \$1.7-Billion Radar Program**

GAO/IMTEC-90-37, 5/31/90

The Federal Aviation Administration's (FAA) Mode Select (Mode S) program is intended to provide more accurate information on aircraft location and to allow controllers and pilots to exchange data. However, 20 years after proposing the idea, FAA has not received the first Mode S system, despite having already spent \$145 million to buy 137 Mode S systems. Even so, FAA still plans to spend over a billion dollars to buy 259 more systems. FAA now expects to install fully operational systems at sites beginning in April 1993—5 years later than planned. This report discusses FAA's (1) progress in developing and testing the initial 137 systems and (2) justification for the additional 259 systems.

**FAA Procurement:
Competition for Major Data-Processing Project Was Unjustifiably Limited**

GAO/IMTEC-90-71, 6/11/90

The Federal Aviation Administration's (FAA) Computer Resources Nucleus (CORN) project is intended to meet the agency's general-purpose data-processing needs for 10 years and provide optional processing support to other organizations within the Department of Transportation. The agency's original objective for the CORN procurement was to achieve full and open competition and encourage innovative vendor proposals. FAA initially recognized that varied combinations of hardware and software could meet its needs, but later decided to require a "single architecture" solution. GAO believes that FAA's requirement of a single architecture is not justifiable and may, in fact, not meet the agency's needs. As a result of this restriction, competition among vendors may have been unnecessarily limited, and potentially cost-saving proposals may have been eliminated.

**Air Traffic Control:
Smaller Terminal Systems' Capacity Requirements Need to Be
Defined**

GAO/IMTEC-90-50, 6/25/90

Terminal Radar Approach Control (TRACON) facilities direct arriving or departing planes at airports. Through the use of the Automated Radar Terminal System IIA, the Federal Aviation Administration (FAA) is attempting to upgrade existing automation systems and to provide air traffic controllers with automated safety enhancements. GAO found that FAA's installation of safety enhancements at smaller TRACON facilities, such as those in Pensacola, Florida, and Binghamton, New York, has been delayed for about 3 years because FAA did not properly manage the program. FAA failed to ensure that development of the system was complete before awarding the production contract and then modified software requirements after awarding the production contract. FAA also did not require the contractor to do integrated tests. In addition, GAO found that FAA lacks a computer capacity and performance management program at its small TRACONS. This constitutes a material weakness under the Federal Managers' Financial Integrity Act because such a program is integral to computer operations that are essential to FAA's air traffic control mission. Further, FAA plans to add computer capacity on the basis of inadequate analysis of current usage, air traffic levels, and future work loads.

**Air Traffic Control:
Inadequate Planning Increases Risk of Computer Failures in Los
Angeles**

GAO/IMTEC-90-49, 7/16/90

More near mid-air collisions have occurred in the airspace in the Los Angeles basin area, one of the most congested in the world, than in any other location in the United States. GAO reviewed plans by the Federal Aviation Administration (FAA) to consolidate four air traffic control facilities in the basin. FAA believes that this consolidation will help it provide better service in the basin's congested airspace. GAO expressed serious reservations about FAA's planned approach.

**Air Traffic Control:
Continuing Delays Anticipated for the Advanced Automation
System**

GAO/IMTEC-90-63, 7/18/90

In 1988 the Federal Aviation Administration (FAA) awarded the International Business Machines (IBM) Corporation a \$3.6-billion contract to complete the design and production of the Advanced Automation System. This project is intended to replace aging air traffic control computer systems with new hardware, software, and controller workstations. GAO found that less than a year after IBM began work on the contract, the first key phase of the project was already 13 months behind schedule because some requirements issues had not been resolved and because FAA and IBM had underestimated the time required to develop and test the software. Yet even the revised schedule does not include enough time to resolve requirements issues and allocates little time for resolving problems that may arise during system testing. Consequently, it is likely that the first key phase of the project will be delayed even longer. This, in turn, could delay replacement of aging automated systems at terminal radar approach control facilities. This situation has serious implications for air traffic safety, since problems with these automated systems have already caused data to flicker and disappear from controllers' screens. Overall, GAO is concerned that needed FAA automation capabilities may not be in place in time to handle the increasing volume of air traffic in the coming decade.

**Air Traffic Control:
The Interim Support Plan Does Not Meet FAA's Needs**

GAO/RCED-90-213, 9/11/90

GAO evaluated the planning and analysis supporting the Federal Aviation Administration's (FAA) Interim Support Plan. FAA developed the plan in 1987 to sustain existing air traffic control equipment and to increase computer capacity, primarily at terminal radar approach control facilities. GAO found that FAA inadequately identified its requirements for the plan and that the plan is not progressing in a manner consistent with its stated urgent nature. Because FAA is about 1 year behind its contracting schedule and about 3 years behind its installation schedule, the traveling public will not benefit from all the plan's equipment until 1998. GAO, which has reported on similar problems before, believes that changes are needed to ensure that future projects are planned and assigned more effectively.

**FAA Budget:
1991 Funding Request for Computers and Communications Can Be
Reduced**

GAO/IMTEC-90-89, 9/17/90

For fiscal year 1991, the Federal Aviation Administration (FAA) is requesting \$2.5 billion in facilities and equipment funding to finance improvements to the national airspace system. These funds will allow FAA to procure and install new equipment and to construct and modernize air traffic control and airway facilities. GAO identified potential reductions of over \$196 million in FAA's fiscal year 1991 budget request for computer and communications systems supporting both air traffic control and administrative functions. The \$147 million in air traffic control reductions were based primarily on program schedule delays that have obviated the need for funding equipment and contracts in fiscal year 1991. In the administrative area, GAO identified potential reductions totaling almost \$49 million for the Computer Resources Nucleus (CORN) project.

**Air Traffic Control:
Efforts to Modernize Oceanic System Delayed**

GAO/IMTEC-91-2, 1/16/91

Air traffic control services in nonradar oceanic areas remain essentially unchanged from the 1950s, with oceanic air traffic controllers still manually updating flight progress on the basis of periodic radio reports received from pilots. This labor-intensive and time-consuming process results in aircraft being kept long distances apart, long flights, and lost opportunities for fuel savings. Although the Federal Aviation Administration (FAA) has started to provide oceanic controllers with automation support, the agency's primary modernization effort—the Oceanic Display and Planning System—is still not fully operational, is more than 3 years behind schedule, and has exceeded the original contract cost by three times. FAA's long-term strategy is to use satellites to provide accurate, near real-time control information on oceanic flights; however, because this strategy now relies on the successful deployment of the Oceanic Display and Planning System, the outcome of this approach is unknown.

**FAA Information Technology:
Complete Cost Data Not Provided to OMB**

GAO/IMTEC-91-22, 1/18/91

The Federal Aviation Administration (FAA) invests billions of dollars in information technology like computer and communications systems. Although the Office of Management and Budget (OMB) requires federal agencies to collect and report data annually on the costs of acquiring, operating, and using information technology, FAA has not provided required data on information technology supporting the air traffic control system. The absence of these data hinders efforts by the Congress, the Department of Transportation, and OMB to make informed decisions on critical information technology activities. FAA officials, who in the past believed that these resources did not need to be reported, have agreed to start reporting cost data on air traffic control systems.

**Air Traffic Control:
FAA's Advanced Automation System Contract**

GAO/IMTEC-91-25, 3/5/91

The Federal Aviation Administration's (FAA) Advanced Automation System (AAS), the centerpiece of FAA's plans to modernize the air traffic control system, is intended to replace aging air traffic control computer systems with new hardware, software, and controller workstations. FAA is now in the third year of its contract, originally valued at \$3.5 billion, with the International Business Machines (IBM) Corporation to complete the design and production of AAS. Because of the size and complexity of the AAS contract and because further estimated cost increases are likely, it is important that FAA receive detailed information on the cost and performance of the contract. IBM has installed a management control system, modeled after Department of Defense guidance, that provides this information and allows FAA to identify the cost and performance of AAS. This system, when combined with periodic FAA verification of contractor-reported costs and performance, should provide a sufficient basis to monitor the contract.

**Global Positioning System:
Production Should Be Limited Until Receiver Reliability Problems
Are Resolved**

GAO/NSIAD-91-74, 3/20/91

The Navstar Global Positioning System is a space-based radio navigation system designed to provide precise and continuous global positioning and navigation data for both military and civil users. This report examines the status of operational testing and the Department of Defense's (DOD) decision to buy additional receiver sets under new low-rate initial production contracts. GAO concludes that DOD should limit procurement of the Global Positioning System to 237 receiver sets until operational testing has proven that the sets have met their reliability objectives. The 237 sets, the minimum quantity the government can order under the current contract, are enough to maintain a production base.

**FAA Registry Systems:
Key Steps Need to Be Performed Before Modernization Proceeds**

GAO/IMTEC-91-29, 4/9/91

The Airmen and Aircraft Registry Systems were developed to promote air commerce and safety. Federal Aviation Administration (FAA) personnel use information from these systems primarily for investigations involving accidents, suspensions or revocations of certificates or registrations, and resolving questions on pilot qualification and aircraft ownership and liens. The Anti-Drug Abuse Act of 1988 requires changes to these systems to make them more effective in serving the needs of law enforcement agencies involved in aviation drug interdictions and investigations. FAA is planning to modernize its information systems by purchasing new automated records storage equipment and modifying existing mainframe data bases. According to GAO, FAA has not adequately defined the needs of its internal users or those of the drug interdiction agencies. Moreover, FAA has used inadequately defined and documented functional requirements, a limited alternative systems design and configuration analysis, and a flawed cost/benefit analysis. These shortcomings (1) leave FAA with little assurance that it has selected the most appropriate technological solution and (2) increase the risk of cost overruns and schedule delays.

**FAA Procurement:
Major Data-Processing Project Is Now Ready to Proceed**

GAO/IMTEC-91-32, 4/10/91

Under the Computer Resources Nucleus (CORN) project, the Federal Aviation Administration (FAA) plans to phase out its own general-purpose data-processing system and rely instead on computer resources owned and operated by a contractor. In three previous reports on CORN (GAO/IMTEC-89-44FS, 3/31/89; GAO/IMTEC-90-38, 5/25/90; and GAO/IMTEC-90-71 6/11/90), GAO said that the project had major unresolved problems and recommended that a contract for CORN not be awarded. After a review by an independent consultant, FAA canceled the original solicitation and issued a new request for proposals in December 1990. According to GAO, FAA's new CORN request for proposals resolves key technical and procurement-related concerns that GAO, the independent consultant's review, and the General Services Administration had raised, and the project is now ready to proceed through the acquisition phase.

**Air Traffic Control:
Status of FAA's Modernization Effort**

GAO/RCED-91-132FS, 4/15/91

The Federal Aviation Administration's (FAA) air traffic control modernization program—known as the Capital Investment Plan (CIP)—includes various improvements, such as upgrading computers, increasing automation, and consolidating facilities. This fact sheet provides information on the status of both the overall modernization effort and selected individual major systems. FAA now estimates that modernization will require about \$31 billion in appropriations through the year 2000—a \$4 billion increase over the FAA estimate cited in GAO's report of a year earlier (GAO/RCED-90-146FS). FAA has completed 30 modernization projects and has 203 active and planned CIP projects. The completed projects account for only 2 percent of the \$31 billion, and the most complex and expensive projects are still unfinished. Major systems have experienced continued cost increases and schedule delays since the earlier report.

**Airport Capacity:
Civilian Use of Military Airfields Has Added Little to System
Capacity**

GAO/RCED-91-130, 4/18/91

Since 1946 the Congress has supported joint use—civilian use of active military airfields—as a means of adding to the national system of public airports. In 1990 the Congress earmarked federal airport program funds to develop joint-use airfields to enhance airport system capacity in major metropolitan areas and reduce congestion and delays at such airports. GAO found that primarily because the 20 military airfields currently supporting joint use are not located in major metropolitan areas and are not near congested major airports, they provide only marginal airport capacity and little relief to congestion and delays at major metropolitan airports. The 20 airfields accommodated less than half of 1 percent of all passengers and aircraft take-offs and landings in 1989. However, as surrounding communities grow and air travel demand increases, these joint-use airfields could play a greater role in mitigating congestion and delays. In addition to being properly sponsored and adequately supported by the surrounding community, three conditions must be met if a joint-use airfield is to meet the congressional goal: (1) the airfield must be located in a major metropolitan area and be near enough to a congested airport to provide a reasonable alternative for air travelers, (2) it should be in demand by either commercial aviation or general aviation (privately owned aircraft operated for business or personal use) that is not currently served by other uncongested airports in the immediate area, and (3) it should not have its particular demand—passenger or general aviation—limited by military restrictions.

Testimony

FAA Appropriation Issues, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations, GAO/T-RCED-89-20, 4/4/89; and before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations, GAO/T-RCED-89-34, 5/4/89

GAO provides an overview of where air traffic control modernization stands and discusses three main points: (1) projected Facilities and Equipment funding needs for upcoming years, well above authorization levels, suggest an urgent need for the Federal Aviation Administration (FAA) to establish priorities and determine when the most important

projects will be required; (2) FAA needs to act promptly to solve implementation problems that could cause delays; and (3) FAA's establishment of a broad range of human resource initiatives is encouraging and must be sustained.

FAA's Voice Communications and Administrative Computer Systems, by Samuel W. Bowlin, Director of Defense and Aeronautics Mission Systems, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations, GAO/T-IMTEC-89-3, 4/4/89; and FAA's Voice Switching and Control System, by Samuel W. Bowlin, Director of Defense and Aeronautics Mission Systems, before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations, GAO/T-IMTEC-89-6, 5/4/89

Both testimonies discuss the Federal Aviation Administration's (FAA) Voice Switching and Control System (VSCS). VSCS, which is estimated to cost over \$730 million, is intended to provide a computer-controlled ground-to-ground and air-to-ground voice communications system that is flexible, expandable, and highly reliable. It is to be implemented at 25 major en route centers, which control air traffic between airports, and is expected to provide communications for the controller workstations that will serve up to 430 positions at each center. New workstations, scheduled for delivery in August 1992, cannot be used until VSCS is ready. Whether VSCS will be ready is uncertain because the project continues to encounter cost increases, schedule delays, and technical difficulties. In addition, to try to remain on schedule, FAA is deferring the testing needed to ensure it acquires a system that will work as intended. In the testimony before the House Subcommittee, GAO also discusses the information contained in its 3/31/89 report on FAA's Computer Resources Nucleus (CORN) project (GAO/IMTEC-89-44FS). The CORN project is to provide centralized computer support for general-purpose applications at FAA headquarters, regional offices, and technical centers. The Subcommittee may want to explore with FAA the tenfold increase in the project's estimated cost and GAO's concerns about FAA's methodology for validating vendor cost proposals.

FAA Research, Engineering and Development Issues, by Victor S. Rezendes, Associate Director for Transportation Issues, before the Subcommittee on Transportation, Aviation, and Materials, House Committee on Science, Space, and Technology. GAO/T-RCED-89-21, 4/12/89

The Aviation Safety Research Act of 1988 requires the Federal Aviation Administration (FAA) to submit an annual research, engineering and

development (RE&D) plan; allocate not less than 15 percent of its fiscal year 1990 budget to long-term research; undertake research on aircraft structures, fire safety, human factors, aeromedical research, and computer simulation models; and establish a research advisory committee. With few exceptions, FAA was generally responsive to these requirements. In issuing a new RE&D plan, reorganizing itself to better manage research, and responding with plans for research in each of the areas named in the act, FAA has demonstrated a desire to improve its program and to respond to congressional direction. Some additional steps still need to be taken, however, such as including cost and staffing data in the budget and highlighting the portion of the program that is devoted to long-term research.

Issues Related to FAA's Effectiveness, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-89-39, 5/9/89

To improve the Federal Aviation Administration's (FAA) effectiveness, several proposals have been made to remove the agency from the Department of Transportation (DOT). Some proposals also would exempt FAA from federal procurement and personnel regulations. According to GAO, it was not in a position to say whether an independent FAA would be better able to deal with the problems in rebuilding safety work forces and modernizing the air traffic control system. However, systemic improvements are needed in both areas regardless of FAA's organizational placement and whether the agency must abide by the procurement and personnel rules that apply to other agencies. Funding is also critical regardless of FAA's placement. GAO believes that the importance of national transportation planning and the indispensable role of aviation in that process should be a threshold consideration in the dialogue over whether FAA should be a part of DOT.

Actions to Mitigate Aircraft Noise at Minneapolis-St. Paul International Airport, by Allen Li, Assistant Director, Transportation Issues, before the Local and Urban Government Committee, Minnesota Senate. GAO/T-RCED-90-4, 10/26/89

This testimony, based primarily on GAO/RCED-89-189, 9/14/89, compares the Minneapolis-St. Paul airport with seven other airports in terms of their noise abatement programs and their concerns regarding federal assistance. GAO concludes that Minneapolis' noise problems are much like those of other airports, and the airport has taken numerous steps to deal with them. However, activity toward abating noise is not always

the same as actually reducing noise or convincing the public that noise levels have fallen. Thus, the nationwide problem of aircraft noise is not likely to be resolved in the near future. Nevertheless, GAO believes that if noise mitigation strategies are to be successfully implemented, a continuing dialogue among all concerned parties must occur and must reflect a balance between the economic necessities of air transportation and the quality of the human environment around an airport.

Issues Related to FAA's Modernization of the Air Traffic Control System
by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-90-32, 2/27/90

GAO's testimony focuses on the major issues in the Federal Aviation Administration's (FAA) modernization of the air traffic control system. GAO believes that FAA has made progress toward modernizing certain portions of the system. However, in view of the tremendous levels of facilities and equipment funding projected for the next few years, it is crucial that FAA show the Congress, the aviation community, and the flying public that ongoing and future activities will result in demonstrable improvements. It is also important, in light of the upcoming Trust Fund reauthorization, to confront the issue of how to finance air traffic control modernization. Furthermore, to minimize future delays, FAA needs to ensure that systems are thoroughly tested and to promptly resolve open issues related to implementation and integration of the new technologies with existing operational procedures.

Issues Related to FAA's Fiscal Year 1991 Budget Request, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations. GAO/T-RCED-90-66, 4/18/90

GAO testified on the Federal Aviation Administration's (FAA) fiscal year 1991 budget request. FAA's budget continues to grow. Its request of almost \$8.3 billion represents a 16-percent increase over the fiscal year 1990 appropriation. The two major components of the budget are the Operations account, which funds ongoing operations and maintenance of the air traffic control (ATC) system, and the Facilities and Equipment account, which funds modernization of the ATC system. These two accounts comprise 80 percent of the total fiscal year 1991 request. While recognizing that FAA will require substantial funding increases to maintain and modernize the ATC system, GAO believes that FAA must

clearly show the Congress, the aviation community, and the flying public how these increases will result in measurable benefits.

FAA Encountering Problems in Acquiring Major Automated Systems, by JayEtta Z. Hecker, Director of Resources, Community, and Economic Development Information Systems, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations, GAO/T-IMTEC-90-6, 4/18/90; and before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations, GAO/T-IMTEC-90-9, 4/26/90

GAO testified on the Federal Aviation Administration's (FAA) efforts to modernize and upgrade its automated systems. In the past, GAO has found consistent, fundamental weaknesses in FAA's acquisition of major automated systems. These weaknesses have resulted in delays in delivering important components for air traffic control modernization, an increased risk that existing air traffic control systems will be stressed beyond capacity, and expensive and inadequately justified procurements. FAA needs to elevate the importance of acquisition management within the agency. Although FAA recently reorganized to give acquisition increased emphasis, such reorganization must be accompanied by adequate management policies and practices. Until FAA gets its acquisition house in order and breaks the trend of unjustified, costly, and delayed procurements, the American public has no guarantee that its money is being well spent. The continued air safety of the public is also called into question.

Issues That Need to Be Considered in Formulating Strategies to Reduce Aviation Noise, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation, Aviation, and Materials, House Committee on Science, Space, and Technology. GAO/T-RCED-90-111, 9/27/90

GAO testified on the impact of insufficient federal guidance on how to deal with aviation noise, the issues needing resolution before an adequate national aircraft noise policy can be formulated, and the Federal Aviation Administration's (FAA) research on aircraft noise. GAO concludes that federal guidance and a focused research program will be needed to reduce aircraft noise in the future. In the short term, a national aircraft noise policy is needed to balance community noise concerns with the air transportation industry's responsiveness to the traveling public. In the long term, FAA's noise research could be more

effective if FAA established priorities among projects and linked these projects to specific objectives.

Aviation Noise: A National Policy Is Needed, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation House Committee on Public Works and Transportation. GAO/T-RCED-90-112, 9/27/90

GAO testified that in the absence of a national noise policy, local airports will likely continue to implement a variety of uncoordinated and independently derived noise restrictions. Although these measures are often needed to reduce airport noise in local communities, they may ultimately impose a serious cost burden on the nation's air transportation system. The extent of these costs is undocumented; however, airlines have said that the current "patchwork quilt" arrangement of local noise restrictions imposes costs and inefficiencies on the system. GAO believes that these costs are likely to become more serious as local restrictions proliferate. The Federal Aviation Administration needs to develop a national noise policy that balances the concerns of airports, airlines, local communities, and the nation's air transportation system.

Surface Transportation Safety

Surface Transportation Safety

Motor Vehicle Safety: Selected Rulemakings by the National Highway Traffic Safety Administration

GAO/RCED-89-11FS, 1/6/89

Some of the responsibilities of the National Highway Traffic Safety Administration (NHTSA) include improving highway safety and reducing motor vehicle crashes and related fatalities and injuries. As of December 13, 1988, none of the rulemaking actions on rear seat lap/shoulder belts, side impact protection, and head restraints for light trucks, multi-purpose passenger vehicles, and buses with a gross vehicle weight rating of 10,000 pounds or less had been finalized. As of that date, each rulemaking action had been in process between 21 and 27 months. The rulemaking process may consist of three stages: an Advance Notice of Proposed Rulemaking, a Notice of Proposed Rulemaking, and a final rule. According to NHTSA, it takes about 2 years on average to issue a final rule, although individual issuance times can vary significantly.

Truck Safety: Implementation of the Single Driver's License and Notification Requirements

GAO/RCED-89-30, 2/13/89

The Commercial Motor Vehicle Safety Act of 1986 contains provisions stating that commercial drivers can hold only one license and that drivers must notify their employers and licensing states of all traffic convictions. The Department of Transportation's Federal Highway Administration (FHWA) is responsible for enforcing the single license and notification requirements. FHWA can assess penalties for each offense drivers commit in violation of these requirements. FHWA, the states, and the commercial motor vehicle industry took extensive steps to inform drivers and employers of the single license requirement. As of September 1988, partly as a result of this campaign, commercial drivers had voluntarily surrendered over 42,000 multiple licenses. When FHWA identifies and notifies commercial drivers that they are not in compliance, the agency accepts drivers' statements, without accompanying evidence of license surrender, as proof of their compliance with the single license requirement. FHWA has no guidance and procedures to detect drivers failing to report their out-of-state traffic convictions. As a result, the agency is not enforcing the act's notification requirement.

**Pipeline Safety:
New Risk Assessment Program Could Help Evaluate Inspection
Cycle**

GAO/RCED-89-107, 3/7/89

The Natural Gas Pipeline Safety Act and the Hazardous Liquid Pipeline Safety Act provide the Department of Transportation (DOT) with the authority to establish and enforce safety standards for both interstate and intrastate pipelines used to transport natural gas and hazardous liquids. Pipeline safety responsibilities are located in DOT's Research and Special Projects Administration (RSPA), which has designated its Office of Pipeline Safety (OPS) and RSPA's five regional offices to implement the national program of pipeline regulation, enforcement, training, and research, called the Pipeline Inspection Priority Program (PIPP). OPS' inspection cycle provides for each pipeline unit to be inspected every 2.5 years. When the cycle was developed, OPS did not consider that units with a relatively high safety risk need to be inspected more frequently than units with a relatively low safety risk. The reliability of OPS' data cannot be ensured because OPS has not provided its inspectors with sufficient training on how to enter and validate the pipeline data and use the priority program. Nor has OPS provided any guidance to regions on how to characterize the potential risk of pipeline units.

**Railroad Safety:
FRA Needs to Correct Deficiencies in Reporting Injuries and
Accidents**

GAO/RCED-89-109, 4/5/89

In 1987 the nation's railroads reported to the Federal Railroad Administration (FRA) 2,647 accidents with aggregate damages of about \$177 million. These railroads also reported 27,198 injuries, including 1,165 fatalities. FRA is responsible for establishing safety regulations for the railroad industry. It uses monthly injury and accident reports submitted by the railroads as a basis for planning and executing its safety programs and for assessing and reporting on safety conditions in the railroad industry. However, GAO believes that FRA has little assurance that its injury and accident data base is reliable because the railroads GAO visited (CSX Transportation, Union Pacific, Amtrak, Chicago and North Western Transportation Company, and Chicago Central and

Pacific Railroad) were not reporting accurately or completely. The railroads were either (1) underreporting the number of injuries and accidents; (2) understating the number of lost workdays and the estimated cost of damages due to train accidents; or (3) in the case of one railroad, not maintaining sufficient information to determine the accuracy of its reporting. To the extent that the data base is inaccurate, railroad safety may not be improving as much as FRA has reported.

**Hazardous Materials:
Federal Training for First Responders to Highway and Railroad Incidents**

GAO/RCED-89-146FS, 5/26/89

"First responders" are state and local government personnel who are the first on the scene of a highway or railroad accident involving hazardous materials. Five federal agencies engage in first-responder training: the Federal Emergency Management Agency; the Environmental Protection Agency; and the Departments of Transportation, Energy, and Health and Human Services. In fiscal years 1987 and 1988, these agencies spent an estimated \$10 million on first-responder training. Their training activities were diverse, including classroom courses, simulation exercises, and the development and nationwide dissemination of videotapes on how to respond to transportation incidents involving hazardous materials.

**Truck Safety:
Information on Driver Training**

GAO/RCED-89-163, 8/3/89

There are no federal or state requirements that tractor-trailer drivers receive formal training as a condition for licensing and no minimum federal standards governing any training that may be provided—even though driver error continues to be cited as the major cause of truck accidents. Although the Federal Highway Administration (FHWA) recognized the need to improve truck driver training programs in 1976 and in 1984 developed proposed minimum standards for training programs, it has no plans to complete the standards because many training schools voluntarily use FHWA's model curriculum and by April 1, 1992, all truck drivers will have to pass written and driving tests that meet minimum federal standards. In its review of driver training programs offered by

24 private training schools and 12 public education institutions, GAO found wide variances in course curricula, hours of training, and costs.

Railroad Safety:
DOT Should Better Manage Its Hazardous Materials Inspection Program

GAO/RCED-90-43, 11/17/89

In 1988 U.S. rails carried over 1.1 million carloads of poisons, chemicals pesticides, and other hazardous materials. Between 1984 and 1988, Federal Railroad Administration (FRA) citations against shippers and railroads for hazardous material shipping violations rose from 499 to 3,575—a 600-percent increase. GAO looked at whether federal safety programs adequately protect the public against injury from train accidents involving hazardous materials. GAO found that FRA has not effectively implemented its hazardous materials inspection program and therefore does not know whether shippers and railroads are adhering to federal hazardous materials regulations. Implementation problems have included inadequate inspection procedures, lack of a systematic approach for targeting high-risk shippers and railroads, too few inspectors, and too much focus on inspecting individual tank cars rather than on evaluating shippers' and railroads' safety procedures. Past GAO and Office of Technology Assessment studies have criticized the Department of Transportation's Research and Special Programs Administration (RSPA) for not maintaining an accurate and complete hazardous materials information system. Although RSPA has made some improvements, additional efforts are needed.

Motor Vehicle Safety:
Passive Restraints Needed to Make Light Trucks Safer

GAO/RCED-90-56, 11/30/89

Light trucks, including pickup trucks, vans, and multipurpose vehicles, have become increasingly popular as passenger vehicles. Even though 8,000 people died in light truck highway accidents in 1987, these vehicles are not required to meet certain safety standards that apply to passenger cars. Light trucks are still exempted from many of the standards that GAO reported on in 1978, the most significant of which is the passive restraint requirement. GAO believes that the passive restraint requirement should be applied to light trucks—a measure that, according to the National Highway Traffic Safety Commission, could

save up to 1,500 lives each year. GAO found that of the major light truck manufacturers, only Ford had plans to install passive restraints.

Mass Transit Grants:

UMTA Needs to Increase Safety Focus at Local Transit Authority

GAO/RCED-90-41, 12/1/89

GAO reviewed the Urban Mass Transportation Administration's (UMTA) oversight of the Southeastern Pennsylvania Transportation Authority (SEPTA), which provides public transportation for the Philadelphia area. Since 1984 UMTA has awarded SEPTA \$738 million in grants for its transit system. Studies of SEPTA's commuter rail and rapid rail lines disclosed safety problems in 1983 and 1984. GAO's review showed that although commuter rail and rapid rail safety conditions have improved, accident and injury rates for motor bus, trolleys, and streetcars have risen. GAO's review also showed that UMTA's oversight has not been adequate to assess SEPTA's safety conditions. Further, GAO found that UMTA did not consider safety in approving SEPTA's annual programs or projects and that SEPTA only recently developed a formal process for assessing the safety importance of proposed projects. Consequently, UMTA has little assurance that its formula and discretionary grant awards are being used to improve safety conditions. Written documentation justifying award decisions was not maintained. As a result, GAO was unable to determine the specific factors the UMTA Administrator considered in awarding discretionary grants to SEPTA. Because GAO believes that written documentation would help ensure that the discretionary grant award process is open and fair, it views the lack of such documentation as a serious flaw.

Highway Safety:

Trends in Highway Fatalities 1975-87

GAO/PEMD-90-10, 3/9/90

The National Safety Council reports that almost half of the approximately 100,000 accidental deaths each year since 1948 resulted from motor vehicle accidents. GAO studied fatal traffic accidents in the United States from 1975 through 1987—a period for which there are data in the Fatal Accident Reporting System—and found an overall increase in fatal accidents from 1975 to 1980, a decrease through 1982 and 1983, and an increase again through 1987. The following are some highlights of GAO's findings: (1) increased use of motor vehicle safety restraints

since 1979 and 1980 appears to have saved the lives of many drivers and passengers; further, the percentage of occupants not using safety restraints who were killed has continued to increase; (2) the rate of involvement of women drivers in fatal accidents increased more than 20 percent since 1975, and this rate of increase applies to nearly all female age groups; (3) the percentage of drinking drivers in fatal accidents appears to be declining, although drinking drivers are a very serious traffic safety problem; and (4) the number of small cars involved in fatal motor vehicle accidents increased more than 100 percent from 1975 through 1987, while the number of light trucks and vans in fatal accidents increased more than 50 percent in the same time. Although both the accident and fatality rates per number of registered vehicles are generally declining for these types of vehicles, these rates remain a matter of concern because they are considerably higher than those for larger automobiles. GAO also looked at highway environment issues, such as narrow bridges, operational deficiencies, wet weather performance, studded tires, freeway signs and related highway geometry, and roadside hazards.

Truck Safety:
States' Progress in Testing and Licensing Commercial Drivers

GAO/RCED-90-78, 3/12/90

Accidents involving large trucks result in over 4,500 highway fatalities and about \$6 billion in financial losses annually. Although large trucks account for only 4.5 percent of vehicle miles traveled, accidents involving them represent 10 percent of all fatal highway accidents. By April 1992, states must test and license their commercial drivers under new federal minimum standards. GAO found that at least 33 states will have a difficult time completing driver testing and licensing by the April 1992 deadline. GAO estimates that at least 360,000 drivers in 13 states may not be tested and licensed on time and therefore could lose their driving privileges. Some states have yet to enact legislation adopting the new federal testing and licensing requirements, and most states are experiencing problems in making computer changes needed to connect their computer systems to the national driver information system. Once these problems are resolved, most states will have 2 years or less to test and license all drivers; states normally license all drivers over a 4-year period. GAO recommends that the Federal Highway Administration (1) encourage states to begin their testing programs while they resolve difficulties in connecting their computer systems to the national information system and (2) develop, in cooperation with each state, action

plans to help ensure that each state completes testing and licensing by the April 1992 deadline.

Railroad Safety:
More FRA Oversight Needed to Ensure Rail Safety in Region 2

GAO/RCED-90-140, 4/27/90

Railroads and rail shippers that transport hazardous materials must follow safety regulations. However, GAO found that the inspection program in the Federal Railroad Administration's (FRA) Region 2—which covers the states of Delaware, Maryland, Ohio, Pennsylvania, Virginia, and West Virginia—may not be ensuring that railroads and shippers are meeting these safety requirements. GAO believes that the lack of written inspection goals and complete and up-to-date inspection point lists, along with possibly inadequate inspector resources, hampers the effectiveness of the Region 2 inspection program. In this report, GAO also looks at (1) FRA's assessments of railroad safety operations (system assessments) to determine whether these assessments identified more safety defects than did routine inspections, (2) FRA regulation of train speeds, (3) how safe it is to route trains carrying hazardous materials through Pittsburgh, (4) enforcement actions taken by FRA against railroads as a result of hazardous materials train accidents in Pennsylvania, and (5) the accuracy of railroad reports of evacuations resulting from these train accidents.

Motor Vehicle Safety:
NHTSA Should Resume Its Support of State Periodic Inspection Programs

GAO/RCED-90-175, 7/5/90

Currently 21 states and the District of Columbia require annual inspections of motor vehicles. In 1989 the National Highway Traffic Safety Administration (NHTSA) issued a controversial report concluding that although periodic inspection programs reduce the number of poorly maintained vehicles on the highways, available data did not conclusively prove that inspection programs significantly reduce accident rates. This report examines whether (1) NHTSA's 1989 report accurately represented the safety benefits of state inspection programs, (2) available evidence indicates that state inspection programs reduce accident rates, and (3) NHTSA appropriately carried out its legislative responsibilities toward inspection programs. GAO recommends that

NHTSA resume its support of periodic testing programs, and this report suggests ways NHTSA could promote these programs.

Railroad Safety:

New Approach Needed for Effective FRA Safety Inspection Program

GAO/RCED-90-194, 7/31/90

The Federal Railroad Administration (FRA) and state railroad inspectors are responsible for inspecting the nation's 580 railroads, which include 20,000 locomotives, 1.2 million freight cars, and 258,000 miles of track. GAO found that FRA's inspection program cannot guarantee that the nation's railroads are operating safely. FRA lacks minimum standards or the frequency of inspections and on how large a territory inspectors are to cover. Also, FRA does not systematically target inspections but rather relies on inspectors' judgment in planning inspections—a practice that could result in high-risk areas receiving decreased inspection activity. In addition, FRA neither requires railroads to report on corrective actions taken, nor does it have a systematic follow-up inspection program to determine whether railroads actually correct safety problems. Finally, GAO found that inspectors were not uniformly applying FRA's safety regulations, which resulted in FRA regions filing different numbers of violations for the same defective condition.

Motor Vehicle Safety:

Information on Recent Controversy Between NHTSA and Consumer Group

GAO/RCED-90-221, 9/27/90

The Department of Transportation's National Highway Traffic Safety Administration (NHTSA) is responsible for ensuring highway and vehicle safety. In September 1989, a newsletter published by the Center for Auto Safety—a private consumer group—alleged that NHTSA had allowed unsafe vehicles to remain on the road. The newsletter listed 25 defect investigations involving roughly 37 million vehicles that NHTSA's Office of Defect Investigation had asked manufacturers to recall voluntarily. Later, NHTSA closed these investigations without ordering a recall. According to NHTSA documents, 21 of the 25 cases were closed because the alleged defect did not pose a safety risk significant enough to warrant further action; 1 was closed because NHTSA lost a federal court appeal; and the remaining 3 were closed because they were similar to the case NHTSA lost in the federal appeals court. This report looks at

(1) the reasons for the controversy between NHTSA and the Center over the 25 closed safety defect investigations, (2) the issues surrounding proposed judicial review of NHTSA's decisions to deny petitions to open safety defect investigations or close investigations without a recall, (3) whether the Center's activities hindered the Office of Defect Investigation's work or damaged public confidence in NHTSA, (4) whether the Center's sale of data obtained from NHTSA is legal, and (5) whether the Center received preferential treatment in obtaining those data.

Truck Safety:

Need to Better Ensure Correction of Serious Inspection Violations

GAO/RCED-90-202, 9/28/90

In 1989 state personnel inspected 1.3 million commercial motor vehicles and issued out-of-service orders to 474,000 vehicles and 92,000 drivers. These orders record vehicle mechanical defects and driver deficiencies deemed so serious that the truck and driver cannot continue the trip until the problems are corrected. Yet GAO found that the Federal Highway Administration (FHWA) and the states do not know the extent of noncompliance with out-of-service orders. Results from studies funded by FHWA show an overall trucker compliance rate of 12 percent, although compliance rates in specific states ranged from 9 to 53 percent. The studies also indicate that drivers left unattended at inspection sites are more likely to continue their trips without correcting out-of-service violations. GAO believes that detection of serious violations means little unless the violations are properly corrected. This report evaluates federal and state efforts to improve truck safety and discusses several ways FHWA and the states could increase compliance.

Motor Vehicle Safety:

Information on Accidental Fires in Manufacturing Air Bag Propellant

GAO/RCED-90-230, 9/28/90

This report discusses recent accidental fires at the U.S. and Canadian facilities that make gas generant (propellant) for car air bags and at the Canadian facility that makes sodium azide, a main propellant ingredient. GAO examines (1) general hazards associated with manufacturing propellant, (2) causes of the fires and resulting injuries, (3) safety and health investigations conducted at the U.S. facilities, and (4) the impact

of the fires on suppliers' ability to meet the automotive industry's air bag needs.

**Highway Safety:
Fatalities in Light Trucks and Vans**

GAO/PEMD-91-8, 11/14/90

This report analyzes the National Highway Traffic Safety Administration's Fatal Accident Reporting System and compares passenger-car fatality rates with those for pickup trucks, vans, and multipurpose vehicles like all-terrain and 4-wheel-drive vehicles. GAO also compares fatalities for these vehicle types in two, more policy-relevant ways, (1) after statistically controlling (adjusting) for such non-vehicle-related factors as driver characteristics and roadway conditions and (2) when only those accidents involving rollovers or side-impact collisions are considered. Although GAO was unable to demonstrate conclusively that changes in specifications for certain vehicles would result in fewer highway fatalities, GAO believes that rollover fatalities are more likely, and side-impact fatalities less likely, to occur in nonpassenger-car vehicles, and that these tendencies are vehicle-specific and cannot be attributed simply to driver, roadway, or accident characteristics.

**Railroad Safety:
FRA's Staffing Model Cannot Estimate Inspectors Needed for Safety Mission**

GAO/RCED-91-32, 11/21/90

The Federal Railroad Administration (FRA) does not know whether it has enough safety inspectors covering the railroad industry because it has not developed inspection staffing standards for its work force. Staffing standards are derived from formulas or mathematical models used to determine the number of employees needed to do a job and to distribute these workers. FRA has begun two efforts to gather the data it needs to develop such standards. Once inspection coverage standards are developed, FRA needs to incorporate them—along with an inspection strategy that targets high-risk railroads—into its existing staffing model, a new model, or some other analytical method. Such action would help in developing staffing standards for calculating the number and types of safety inspectors FRA needs to fulfill its safety mission.

Financial Management:
Internal Control Weaknesses in FRA's Civil Penalty Program

GAO/RCED-91-47, 12/26/90

As part of a continuing GAO effort to describe how federal agencies are improving internal controls under the Federal Managers' Financial Integrity Act of 1982, this report looks at the financial management of the Federal Railroad Administration's (FRA) civil penalty program. Under this program, railroads are assessed penalties for violations of safety regulations that pose an immediate safety hazard. GAO found that internal control weaknesses in the financial management of the program undermined compliance with federal standards for settlement, collection, accounting, and recordkeeping. In addition, FRA did not comply with its own internal standard operating procedures and policies. This report describes the specific problems GAO identified and their implications. GAO believes that a rigorous program to enforce adherence to internal control principles, which could include training and more continuous oversight, would help to prevent a recurrence of these conditions. Such a program would also strengthen the financial management of FRA's civil penalty program and increase government revenues.

Truck Safety:
Improvements Needed in FHWA's Motor Carrier Safety Program

GAO/RCED-91-30, 1/9/91

To promote the safe operation of commercial motor vehicles, the Federal Highway Administration (FHWA) began a safety review program in October 1986 to educate motor carriers—persons or companies that transport goods or passengers as a business—about federal safety regulations and to rate the safety management controls that carriers have in place to comply with these regulations. GAO found that FHWA had rated about 84,300 (40 percent) of the 213,000 interstate motor carriers in business as of May 1990. Although the agency has accomplished a great deal, about 129,000 carriers must be rated before FHWA's established deadline of September 30, 1992. GAO believes that FHWA is unlikely to meet this deadline because (1) the universe of carriers is constantly changing as new carriers enter and other carriers merge or go out of business and (2) FHWA has assigned a limited number of safety investigators to this task. Although 70 percent of the motor carriers assessed under the safety review program received a less than satisfactory

rating, FHWA has not adequately implemented its two follow-up procedures for ensuring that carriers correct deficiencies in safety management controls--certification letters from carriers and compliance reviews. Until FHWA knows whether carriers have improved their controls, it cannot be sure that its safety review program is promoting the safe operation of commercial vehicles.

**Pollution From Pipelines:
DOT Lacks Prevention Program and Information for Timely
Response**

GAO/RCED-91-60, 1/28/91

During the 1980s, over 3,900 spills from land-based pipelines released nearly 20 million gallons of oil into U.S. waters—almost twice as much as was released by the March 1989 Exxon Valdez oil spill. GAO found that although the Department of Transportation (DOT) is responsible for preventing water pollution from petroleum pipelines, it has not established a program to prevent such pollution. DOT has instead delegated this responsibility to the Coast Guard, which has a program to stop water pollution from ships but not from pipelines. In the absence of any federal program to prevent water pollution from pipelines, both the Coast Guard and the Environmental Protection Agency have taken steps to plan for and respond to oil spills, including those from pipelines, as required by the Clean Water Act. The Coast Guard cannot, however, adequately plan for or ensure a timely response to pipeline spills because it generally does not know the specific locations and operators of pipelines.

**Railroad Safety:
Weaknesses Exist in FRA's Enforcement Program**

GAO/RCED-91-72, 3/22/91

This report examines whether the Federal Railroad Administration's (FRA) enforcement program encourages compliance with safety regulations; is being properly implemented; and is timely in reviewing, transmitting, and settling penalties. According to GAO, the enforcement program does not effectively ensure that the nation's railroads comply with federal safety regulations. Over the past 5 years, FRA has found an increasing number of safety defects and violations despite an overall decline in railroad equipment, track, and employment. In addition, the

same types of safety problems recurred, such as defective track, inadequate attention to operating rules and practices, and unsafe locomotives. GAO also found that although FRA's policy requires inspectors to apply safety regulations uniformly, the inspectors did not do so. In addition, FRA does not review, transmit, and settle civil penalties in a timely manner. At the end of 1989, FRA took 36 months to settle civil penalties—16 months longer than in 1982 when GAO first examined the issue. One reason for this increase was that FRA had a backlog of about 24,000 violations awaiting legal review and/or settlement.

**Freight Trucking:
Promising Approach for Predicting Carriers' Safety Risks**

GAO/PEMD-91-13, 4/4/91

Freight trucks pose special safety risks, with fatalities about twice as likely in accidents involving tractor-trailer trucks as in those involving automobiles only. GAO was asked to determine if certain economic and other conditions could be used as predictors of safety outcomes. GAO developed a model that hypothetically links changes in economic conditions to declining safety performance in the freight-trucking industry. GAO's preliminary findings, using data on 537 carriers, are that seven financial ratios show promise as predictors of safety problems in the interstate trucking industry. For example, three measures of profitability—return on equity, operating ratio, and net profit margin—were associated with subsequent safety problems as measured by accident rates. GAO's study demonstrates the potential for developing preventive strategies geared to differences among carriers and drivers, and it suggests the importance of the Department of Transportation's monitoring the variations in carrier accident rates in order to have a sound basis for developing those preventive strategies.

Testimony

Pipeline Safety Risk Assessment Program Could Help Evaluate Inspection Cycle, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations. GAO/T-RCED-89-15, 3/9/89

This testimony summarizes GAO's 3/7/89 report entitled Pipeline Safety: New Risk Assessment Program Could Help Evaluate Inspection Cycle (GAO/RCED-89-107), which is described above.

Improvements Needed in DOT's Hazardous Materials Rail Safety Program, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Hazardous Materials, House Committee on Energy and Commerce. GAO/T-RCED-90-13, 11/7/89

This testimony summarizes GAO's 11/17/89 report entitled Railroad Safety: DOT Should Better Manage Its Hazardous Materials Inspection Program (GAO/RCED-90-43), which is described above.

Improvements Needed in FRA's Hazardous Materials Inspection and Safety Reporting Programs, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Government Activities and Transportation, House Committee on Government Operations. GAO/T-RCED-90-35, 2/28/90

Railroads transport about 1.1 million carloads of poisons, chemicals, pesticides, and other hazardous substances annually. Railroad safety indicators show that risks of hazardous materials releases have been increasing rather than decreasing. During the past 3 years, about 8,000 accidents occurred, including 144 with hazardous materials releases. GAO found that the Federal Railroad Administration (FRA) lacked assurances that shippers and railroads were adhering to hazardous materials regulations. GAO also found that the five railroads it visited were not accurately or completely reporting injury and accident data. In response to GAO's recommendations, FRA said it will take actions that, if implemented, will significantly increase the effectiveness of the FRA hazardous materials inspection and safety reporting programs. However, unless the Research and Special Programs Administration, which issues Department of Transportation hazardous materials regulations, establishes a shipper registration program, FRA may lack the information it needs to identify and target shippers for inspection in a systematic manner.

Improvement Needed in FRA's Safety Inspection Program, by John W. Hill, Jr., Associate Director for Transportation Issues, before the Subcommittee on Transportation and Hazardous Materials, House Committee on Energy and Commerce. GAO/T-RCED-91-2, 10/5/90

Federal Railroad Administration (FRA) and state railroad inspectors are responsible for inspecting the nation's 580 railroads, which use 258,000 miles of track. GAO testified that because of major problems in FRA's operation of its rail safety inspection program, there is little assurance that the nation's railroads are operating safely. GAO recommends

defining inspection coverage, refining the approach to targeting inspections, establishing a follow-up inspection program, and ensuring that safety standards are uniformly applied.

Railroad Safety: Weaknesses in FRA's Safety Program, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Hazardous Materials, House Committee on Energy and Commerce. GAO/T-RCED-91-32, 4/11/91

GAO's work on the rail safety issue over the last 2 years shows that the Federal Railroad Administration (FRA) (1) has found the same types of defects recurring at the same railroads, (2) does not impose and settle civil penalties in a timely manner, (3) does not have standards defining the frequency of railroad inspections or the size of the territory an inspector could cover, and (4) has no system to track corrective actions taken by railroads. In addition, inspectors have not uniformly applied safety regulations throughout the industry, did not generally target high-risk shippers and railroads for inspections, and did not evaluate the effectiveness of shippers' and railroads' safety procedures. The FRA Administrator recognizes that problems exist and has begun to take corrective actions. In addition, the Hazardous Materials Transportation Uniform Safety Act of 1990 established a mandatory shipper registration program that will give FRA more complete shipper information.

Automobile Weight and Safety, by Eleanor Chelimsky, Assistant Comptroller General, Program Evaluation and Methodology Division, before the Subcommittee on Consumer, Senate Committee on Commerce, Science, and Transportation. GAO/T-PEMD-91-2, 4/11/91

According to GAO, the relationship between automobile size and occupant safety is not a simple one. However, its major conclusion is that it is not true that cars become more dangerous simply by getting lighter. GAO found that heavier cars are not invariably safer than lighter ones; indeed, the highest fatality rates are in cars in the middle of the weight distribution. When two cars of different masses collide, the smaller car is likely to sustain more damage than the larger one. However, GAO estimates that if the proportion of small cars on the road were to grow substantially, the total fatality rate in two-car accidents would decline slightly due to the decreased likelihood of comparatively deadly collisions between large and small cars.

Surface Transportation Infrastructure

Surface Transportation Infrastructure

Highway Contracts:

Federal-Aid Highway Contracts Awarded to Minority- and Women-Owned Businesses

GAO/RCED-89-78, 2/13/89

Until the Surface Transportation and Uniform Relocation Assistance Act of 1987 was passed, states were required, unless exempted by the Secretary of Transportation, to spend at least 10 percent of their fiscal year federal-aid highway funds on disadvantaged business enterprises (DBE). Under a separate program, administratively established by the Federal Highway Administration (FHWA), states were also requested to spend at least 2 percent of their federal-aid highway funds with women owned businesses. The 1987 act combined the separate goals into a single program, requiring states, unless exempted by the Secretary, to spend at least 10 percent with all DBEs, including women-owned businesses. Although data limitations affected GAO's ability to assess the national impact of the legislative change on the DBE program, its analysis of DBE program activity data reported to FHWA showed that (1) prime contracts and subcontracts awarded to minority- and women-owned businesses remained slightly over \$1.5 billion a year from fiscal year 1985 to fiscal year 1988; (2) women-owned businesses increased their share of DBE contract awards from 19.4 percent in fiscal year 1985 to 29.6 percent in fiscal year 1988; and (3) businesses owned by Black Americans, Hispanic Americans, Native Americans, and other minority groups experienced declines in their respective shares of DBE contracts awarded from fiscal year 1987 to June 30, 1988.

Mass Transit Grants:

UMTA Needs to Improve Procurement Monitoring at Local Transit Authority

GAO/RCED-89-94, 3/31/89

GAO was asked to review the Urban Mass Transportation Administration's (UMTA) oversight of the Southeastern Pennsylvania Transportation Authority's (SEPTA) compliance with federal procurement requirements. UMTA provides mass transportation assistance through two primary grant programs. As a condition for receiving grants, SEPTA is required to use a competitive procurement process that fosters full and open competition and reasonable prices. Unless UMTA has reviewed and certified SEPTA's procurement system, SEPTA is required to provide a written self-certification that it complies with the procurement requirements. GAO's

review showed that UMTA's monitoring procedures and practices were not adequate to ensure SEPTA's compliance with procurement requirements or to detect the deficiencies found by an independent consulting firm. UMTA has generally relied on SEPTA's self-certification, substantiated by preaward and triennial reviews and independent annual audits, that it complied with procurement requirements. UMTA needs to improve its internal controls by increasing monitoring procedures and practices to ensure that SEPTA remains in compliance with procurement requirements after taking corrective actions.

**Highway Trust Fund:
Condition and Outlook for the Highway Account**

GAO/RCED-89-136, 5/9/89

The Highway Trust Fund was created in 1956 to provide a mechanism for financing the Federal-Aid Highway Program. This umbrella program generally refers to the various components and programs that are funded through the Federal Highway Administration and administered by states' highway or transportation agencies. The balance in the Highway Account at the end of fiscal year 1988—about \$9 billion—is needed to pay commitments to states. The balance, therefore, is not a surplus. These funds, along with projected future revenues, will be used to pay about \$31 billion in commitments that were outstanding as of fiscal year 1988.

**Traffic Congestion:
Trends, Measures, and Effects**

GAO/PEMD-90-1, 11/30/89

Many transportation experts believe that escalating traffic congestion threatens the efficient movement of people and commerce in the United States. Moreover, some believe that traffic congestion could become the number one surface transportation problem by the 1990s and into the next century. This report seeks to provide the Congress with an overview of the traffic congestion problem. GAO examined the following questions: What forces affect the traffic congestion problem and how have they shaped its nature and severity? How is traffic congestion measured and how credible are the estimates of urban freeway delay developed by the Federal Highway Administration? What effects of traffic congestion have been measured?

**Traffic Congestion:
Federal Efforts to Improve Mobility**

GAO/PEMD-90-2, 12/5/89

Both rural and urban interstates are becoming increasingly crowded. Reauthorization of the Highway Trust Fund in the early 1990s will give the Congress and the Department of Transportation (DOT) an opportunity to consider changes in the federal role in improving freeway and roadway mobility. This study, one in a series of GAO reports on freeway mobility, presents a comprehensive overview of current DOT efforts to reduce traffic congestion. The study addresses three questions: What activities does DOT now have under way to help communities alleviate traffic congestion? What resources does DOT use to support its congestion reduction activities? What evaluation efforts are being made to assess the effectiveness of DOT's congestion reduction activities?

**Transportation Infrastructure:
Reshaping the Federal Role Poses Significant Challenge for Policy Makers**

GAO/RCED-90-81A, 12/28/89

In June 1989, GAO brought together 19 nationally known transportation authorities to discuss the reshaping of the nation's surface transportation programs. The results of this seminar are particularly timely in light of the Congress' upcoming deliberations on the reauthorization and funding (possibly totaling \$90 billion) for a 5-year federal highway and mass transit program. The seminar experts almost unanimously cited two surface transportation problems—traffic congestion and road and bridge deterioration—as priorities facing the nation today and in the decade to come. The transportation experts agreed that as construction of the Interstate Highway System winds down, the focus of the federal highway role needs to be reexamined. One option is a two-tiered funding system. The first tier would fund highways considered to be of national importance; the second tier would give states greater discretion for responding to their specific transportation needs by consolidating many categorical programs into a block grant. Because many transportation experts doubt that current federal, state, and local revenue sources can meet the nation's ever-expanding transportation needs, tolls were suggested as a way to raise additional revenue. The transportation experts also agreed that better coordination of and cooperation among the different transportation modes is needed to improve overall mobility.

**Transportation Infrastructure:
Panelists' Remarks at New Directions in Surface Transportation
Seminar**

GAO/RCED-90-81B, 12/28/89

This is the second volume dealing with GAO's June 1989 seminar on the reshaping of America's surface transportation programs. This report presents in their entirety the presentations of the 19 nationally known transportation authorities who attended.

**Amtrak:
Limited Income From the Revenue Enhancement Program**

GAO/RCED-90-76, 2/1/90

Amtrak's Revenue Enhancement Program (REP) was designed to generate income through competition with the private sector in areas other than passenger service. In the past, Amtrak had said that it would rely on the REP to help reduce federal subsidies and to provide significant additional funding necessary for capital needs in the 1990s. The REP has grown over the past 5 years; however, GAO concludes that it has neither contributed significantly to Amtrak's capital requirements nor reduced federal subsidies. Amtrak's President said in 1989 that a federal subsidy will be needed in the future to help replace passenger cars and locomotives. In addition, Amtrak has not provided the Congress with detailed financial information about current and planned revenue enhancement projects and their contribution to total projected revenues. GAO also looked at whether Amtrak competed fairly with the private sector when it bid for a 1988 welding contract with New Jersey Transit. In GAO's view, Amtrak's efforts to secure the contract by using outdated costs when better data were available and by establishing a narrow profit margin raises a question as to whether Amtrak met either the congressional directive to compete fairly or its own policy of making a profit on each contract. Further, Amtrak did not properly assign all costs associated with executing the contract. GAO estimates that, as a result, Amtrak lost \$89,870 rather than making the \$87,780 profit reported.

**Transportation Infrastructure:
States Benefit From Block Grant Flexibility**

GAO/RCED-90-126, 6/8/90

GAO reviewed the experience of five states—California, Minnesota, New York, Rhode Island, and Texas—participating in the Federal Highway Administration's Combined Road Plan demonstration project. The demonstration project is similar to a block grant in that it gives state officials greater latitude (than would be allowed under a traditional categorical program) in determining how certain federal-aid highway funds will be spent. In this report, GAO (1) reviews how states have benefited from the funding flexibility provided by the demonstration project, (2) identifies the administrative advantages states have derived from streamlined operating procedures provided by the demonstration project, and (3) reviews how states' administration of the Federal-Aid Highway Program compares with federal administration of the program

**Loma Prieta Earthquake:
Collapse of the Bay Bridge and the Cypress Viaduct**

GAO/RCED-90-177, 6/19/90

On October 17, 1989, the Loma Prieta Earthquake struck northern California and caused the collapse of a two-level, 1.25-mile section of the Cypress Viaduct on Interstate Route 880 in Oakland; 42 people were killed. A section of the San Francisco-Oakland Bay Bridge also collapsed, resulting in one death. GAO examined what the California Department of Transportation (CALTRANS) knew about the vulnerability of the two structures to earthquake damage, the levels of federal and state funds spent to strengthen bridge and viaduct structures vulnerable to earthquakes, and the funds needed to complete California's seismic retrofit program. GAO found that the retrofit program, initiated 18 years ago to correct deficiencies in structures designed before 1971, has received lower priority than other highway safety projects. Only the first phase of a three-phase program had been completed. CALTRANS engineers believe that if the retrofit program had progressed to the third phase—which calls for reinforcement of all multicolumn structures like the Cypress Viaduct—before the October 1989 earthquake, they would have identified a structural flaw in the viaduct's support columns that they think contributed to its collapse. CALTRANS officials thought the Bay Bridge had been retrofitted sufficiently before the earthquake. Since the earthquake, the state has focused more attention on completing its

retrofit program, creating a separate budget and staff for the project. However, the state has not appropriated enough money to complete the program. The decision was deferred until after June 5, 1990, when voters approved a ballot measure intended to make additional transportation funds available.

**Transportation Infrastructure:
A Comparison of Federal and State Highway Laws**

GAO/RCED-90-157, 6/27/90

In 1987 the Congress authorized the Combined Road Plan—a block grant demonstration project designed to test the feasibility of giving states more flexibility to administer highway funds. The demonstration project not only gives states more latitude in making funding decisions but also allows states to perform administrative functions like approving design exceptions and doing final project inspections. GAO examined prevailing wage, environmental protection, disadvantaged business enterprise, and highway design laws at the state and federal levels to see whether they afforded equivalent protections. The Congress could use this information to decide whether states could assume more responsibility for the federal highway program in these areas. GAO found that although some state prevailing wage, environmental, disadvantaged business contracting, and highway design laws parallel the federal statutes, others vary considerably.

**Scenic Byways:
A National Program, If Created, Should Be Small Scale**

GAO/RCED-90-241, 9/28/90

Interest in establishing a national scenic byway program dates to the mid-1960s. By 1986 the President's Commission on Americans Outdoors recommended the creation of a national network of state and locally designated scenic byways to preserve the scenic or historic character of lesser traveled roads. As the Congress deliberates the 1991 reauthorization of the federal highway program, creation of a national scenic byway program is again being considered. GAO reviewed various scenic byways designated by state and private organizations to (1) determine the characteristics of selected byway programs and activities, (2) determine the criteria that states use to designate byways, and (3) identify issues that scenic byway officials have raised about the creation of a national scenic byways program. GAO believes that a national scenic

byways program should be of limited scope for several reasons. First, there is little enthusiasm among state byway officials for a large program. Most officials GAO spoke with, however, would support a small-scale program that helps the exchange of scenic byway information among the states and assists in promoting byways created for tourism. Second, given the limited funding available for constructing and repairing the nation's bridges and roads, increased funding for a scenic byways program may not be warranted at this time.

**Highway Financing:
Participating States Benefit Under Toll Facilities Pilot Program**

GAO/RCED-91-46, 12/17/90

GAO reviewed the progress that participating states have made under the Toll Facilities Program in testing the use of tolls as a way of financing highway construction. This report looks at (1) the status of the projects including estimated construction costs and start and completion dates; (2) obstacles that the states have met in starting their projects; (3) the effect that toll revenues will have on project financing; and (4) states' planned use of innovative toll collection techniques. GAO also discusses the effect that a low federal funding share could have on the projects states select for toll financing if toll use on federal-aid highways is expanded. GAO found that the eight states participating in the pilot program are making progress in developing their projects. The toll financing option provided these states with access to the tax-exempt bond market to raise additional cash for road construction. In some cases, access to the bond market helped states complete projects sooner than they would have under traditional financing methods because construction funds could be raised more quickly. GAO believes that states will also benefit from tolls in the long run because they can use the toll revenue to pay maintenance costs over the life of a project.

Testimony

Issues to Be Considered During Deliberations to Reauthorize the Federal Aid Highway Program, by John W. Hill, Jr., Associate Director for Transportation Issues, before the Subcommittee on Water Resources, Transportation, and Infrastructure, Senate Committee on Environment and Public Works. GAO/T-RCED-90-50, 3/19/90

In light of upcoming deliberations on reauthorizing the Federal-Aid Highway Program, GAO discusses the difficult decisions the Congress will have to make about how best to spend available federal dollars to

meet highway and bridge needs. GAO focuses on (1) increased funding needed for the Interstate Rehabilitation, Restoration, Resurfacing, and Reconstruction (4R) Program; (2) projections that Highway Trust Fund revenues will exceed authorized commitment levels; (3) tolls as a viable, alternative revenue source for states; (4) increased state flexibility in targeting spending as a result of the Combined Road Plan demonstration block grant; and (5) variance in the degree to which state highway laws parallel federal statutes.

Preserving the Interstate System, by John W. Hill, Jr., Associate Director for Transportation Issues, before the Subcommittee on Surface Transportation, House Committee on Public Works and Transportation. GAO/T-RCED-90-68, 4/24/90

Although the Interstate Highway System represents only 1 percent of all roads, Interstate routes carry 21 percent of the nation's vehicle traffic. Given the system's dominant and vital role in the nation's transportation network, the federal investment of over \$100 billion in Interstate construction must be preserved. Yet in 1988 the Department of Transportation classified 43 percent of the nation's Interstate pavements as in either fair or poor condition. GAO presents several options for the Congress to consider in realigning federal responsibilities and funding the program to better protect the nation's investment in the Interstate Highway System.

Operations of and Outlook for the Highway Trust Fund, by John W. Hill, Jr., Associate Director for Transportation Issues, before the Subcommittee on Water Resources, Transportation, and Infrastructure, Senate Committee on Environment and Public Works, GAO/T-RCED-90-79, 5/9/90

GAO focuses on the operations of the Highway Trust Fund, including yearly revenue and expenditure streams, reasons for buildups in the fund's balance, and GAO's observations on the process for drawing down the balance. Unfortunately, the federal budget deficit has changed the role of trust funds. Today, trust fund balances are not being spent for their intended purpose but are being used instead to mask the deficit. As a result, any accelerated drawdown of the Highway Trust Fund balance can be accomplished only by increasing the deficit or decreasing funds available for other federal programs.

UMTA Project Oversight and Mass Transit Issues, by John W. Hill, Jr., Associate Director for Transportation Issues, before the Subcommittee on Housing and Urban Affairs, Senate Committee on Banking, Housing, and Urban Affairs. GAO/T-RCED-90-103, 8/7/90 (Los Angeles, California), and GAO/T-RCED-90-102, 8/8/90 (San Jose, California)

GAO discussed local transit authorities' management of the Department of Transportation's Urban Mass Transportation Administration (UMTA) grants and UMTA's effectiveness in overseeing active grants, which totaled about \$33 billion nationwide at the end of 1989. These grants had been awarded to about 700 state and local grantees to help fund over 4,000 mass transit projects. During the 1980s, UMTA cut back its oversight of grantees by allowing grantees to certify that they would properly manage the grants in accordance with grant conditions and federal requirements. GAO testified that federal mass transit programs are at high risk for mismanagement because some grantees, despite their pledges, were not using grant funds for project purposes or according to federal requirements. In addition, UMTA's oversight mechanisms may be ineffective in detecting grantees' noncompliance with grant conditions or federal requirements.

Transportation Infrastructure: Flexibility in Federal-Aid Funding Essential to Highway Program Restructuring, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Water Resources, Transportation, and Infrastructure, Senate Committee on Environment and Public Works. GAO/T-RCED-91-4, 12/10/90

Although the Federal-Aid Highway Program must address national priorities like preservation of the Interstate highways, individual state needs must also be accommodated through program funding flexibilities. GAO has previously endorsed the benefits derived through federal funding flexibility, such as through pooling of highway funds. In addition, burgeoning transportation problems like traffic congestion require the federal government to be open to intermodal solutions. This testimony (1) discusses how states have used existing Federal-Aid Highway Program flexibilities and other funding mechanisms and (2) suggests options for restructuring the Federal-Aid Highway Program. GAO also discusses the status of the nation's and Nevada's highways.

Transportation Infrastructure: Federal Highway Administration FY 1992 Budget Request and Highway Program Reauthorization Proposal, by Kenneth M. Mead, Director of Transportation Issues, before the Senate Committee on Environment and Public Works. GAO/T-RCED-91-12, 3/5/91

The nation faces significant challenges in meeting burgeoning highway and bridge needs—an investment estimated at \$430 billion over the next 15 years. Increasing budgetary constraints, however, will force trade-offs between highways and other federal programs in order to fund the increases proposed by the administration. GAO believes that a two-tiered highway program will provide states with more flexibility in meeting their highway and bridge needs. Yet the administration's proposed highway program does not adequately ensure that preservation will be a high priority in light of states' anticipated needs to enhance highway capacity. GAO believes that although the administration's proposal provides an incentive for states to fund highway preservation projects, a minimum level of investment in Interstate preservation may ensure that preservation receives continued attention. GAO cites several other areas where program effectiveness could be increased, including designing a more efficient method to allocate bridge funds, ensuring that apportionment formulas minimize adverse impacts on states, and providing guidance for the successful implementation of highway/mass transit funding flexibility.

Mass Transit: Historical Patterns and Future Outlook, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation. GAO/T-RCED-91-15, 3/5/91

GAO supports the concept of defining mass transit objectives in the context of a nationwide surface transportation system. GAO sees merit in some aspects of the Urban Mass Transportation Administration's (UMTA) 5-year, \$16.3 billion proposal to restructure its source of funds and provide funding flexibility between transit and highways. Nevertheless, GAO is concerned that unless certain steps are taken, the proposed flexibility could result in gains for highways at the expense of mass transit. Further, since federal transit funds could decrease in real dollars under the proposal and large demand exists for urban and rural transit systems, it is particularly important that UMTA ensure the judicious, prudent, and effective use of scarce resources and that grant recipients manage federal funds in the most efficient and economical manner. Also,

UMTA needs to give particular attention to program planning and oversight to avoid the deficiencies of the present system and to ensure the best use of limited federal transportation dollars in the future.

Transportation Infrastructure: Department of Transportation Highway and Mass Transit Program Reauthorization Proposals, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Surface Transportation, House Committee on Public Works and Transportation. GAO/T-RCED-91-26, 4/18/91

The proposed Surface Transportation Assistance Act of 1991, a 5-year, \$105 billion package, would reauthorize highway and highway safety programs at \$89.1 billion and mass transit programs at \$16.3 billion. GAO's testimony focuses on future federal spending, consolidation of highway programs, increased funding flexibility between mass transit and highways, and the outlook for highway safety. Under the proposal, highway and highway safety program funding would experience real growth over the next 5 years as compared with the funding provided over the last 5 years. Mass transit funding, however, would decline in real terms. Revenue projections for the Highway Trust Fund indicate that highway and mass transit authorizations for the next 5 years could be increased above the proposed levels by \$5.1 billion and \$2.2 billion, respectively. However, pressures to reduce budget deficits will likely dim the prospects of obtaining large increases in program funding levels. GAO believes that if a significant reduction in the federal matching share occurs, it should be phased in over time. Consolidating most categorical highway programs into a two-tiered system—an upper tier for highways of national significance and a lower tier for other federal-aid roads—would allow states greater flexibility to target federal dollars to their individual needs. GAO supports a multimodal investment strategy to address highway and mass transit needs, but a number of obstacles need to be overcome to eliminate the biases that tend to favor selecting highway projects over mass transit. Although existing state highway programs and the National Highway Traffic Safety Administration's Motor Carrier Safety Assistance Program will continue to be the cornerstones for the support of national highway safety efforts, significant strengthening of Federal Highway Administration enforcement of motor carrier safety is needed to ensure safe operation of commercial vehicles.

Mass Transit: Reauthorization Offers Opportunity to Address the Appropriate Federal Role, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Housing and Urban Affairs, Senate Committee on Banking, Housing, and Urban Affairs. GAO/T-RCED-91-41, 4/24/91

GAO testified on the Urban Mass Transportation Administration's (UMTA) 5-year, \$16.3 billion mass transit reauthorization proposal and UMTA's grant programs. The \$16.3 billion figure represents a nominal 1-percent increase in authorized funding over that of the past 5 fiscal years and could represent nearly a 17-percent decrease in real dollars over the next 5 years. GAO supports a multimodal strategy to address transportation needs, but a number of obstacles need to be overcome, including the biases that favor funding highways over mass transit and the effective integration of transit and highway planning and decision-making at all levels of government. UMTA's proposal would shift a larger share of the financial burden to grant recipients by reducing the federal share for capital projects from 80 percent to 60 percent. Passing these added costs on to transit users through higher fares could thwart efforts to attract ridership away from automobiles and increase transit costs for those who can least afford it. UMTA does not effectively oversee grantees' management and use of federal funds. Given limited federal dollars and great mass transit needs, grantees must have management controls that ensure the appropriate, prudent, and efficient use of funds, and UMTA must effectively monitor grantees' activities.

Competition and Consumer Protection

Competition and Consumer Protection

Airline Service: Changes at Major Montana Airports Since Deregulation

GAO/RCED-89-141FS, 5/24/89

This fact sheet provides information on changes in airline service at seven major airports in Montana since the airline industry was deregulated in 1978. The data indicate that between 1978 and 1988, the number of airline passengers carried increased at two airports, decreased at two others, and remained about the same at three. For the seven airports as a group, the number of passengers increased by 15 percent. The number of aircraft departures increased at all seven airports during this period, but the percentage of those departures on jet aircraft decreased at all seven (by 62 percent as a group). The number of routes with direct service also decreased at all seven airports (by 24 percent as a group).

Airline Competition: DOT's Implementation of Airline Regulatory Authority

GAO/RCED-89-93, 6/28/89

Fundamental changes occurred in the airline marketing and operating strategies between 1979, when the Civil Aeronautics Board first formulated its assumptions about the contestability of the airline industry (i.e., that airlines not currently in a market could readily enter and provide competition if incumbents raised fares to excessive levels), and 1985, when the Department of Transportation (DOT) used these assumptions to approve mergers. To compete for business, airlines developed such strategies as frequent flyer programs, travel agent commission overrides (bonus commissions paid to travel agents to encourage booking on a particular carrier), and computerized reservation systems, each of which can make it more difficult for entrants to successfully challenge incumbents. DOT had an opportunity to study the combined effects of these strategies on competition but did not do so. DOT said that there was insufficient time to conduct an industrywide study because of the number of merger cases it had to review. In analyzing potential mergers, DOT considered physical barriers, such as whether airports had the capacity to handle take-offs and landings, as the only meaningful measures of whether a merger would foreclose the market to competition. In the area of consumer protection, DOT has increased the speed with which it handles complaints but missed opportunities to protect

consumers because it has not adequately coordinated its efforts with those of the states.

**Airline Competition:
DOT and Justice Oversight of Eastern Air Lines' Bankruptcy**

GAO/RCED-90-79, 2/23/90

GAO reviewed the responsibilities of the Department of Transportation (DOT) and the Department of Justice with respect to the Eastern Air Lines bankruptcy proceedings. GAO believes that both Departments have adequately fulfilled their responsibilities to protect airline competition. Most notably, both Departments opposed the sale of Eastern's Philadelphia gates to USAir on the grounds that it would reduce competition in the Mid-Atlantic region. Their opposition ultimately led to the sale of the gates to Midway Airlines. GAO believes that legislation is not needed to clarify DOT's and/or Justice's responsibilities for cases like this. Because Justice already represents the United States in the Eastern bankruptcy proceeding, it can raise competitive issues for itself or on behalf of DOT. However, GAO's review of past cases suggests that if Justice were not a party, neither Department would have difficulty becoming a party because both are responsible for protecting and promoting competition. Even if DOT or Justice were denied status as a party, they could take action outside the bankruptcy proceeding to protect or promote competition.

**Railroad Regulation:
Economic and Financial Impacts of the Staggers Rail Act of 1980**

GAO/RCED-90-80, 5/16/90

The Congress passed the Staggers Rail Act of 1980 to improve the financial health of the nation's railroads. While reducing regulation of the railroad industry, the act continued regulation in areas without competition. Overall, GAO found that the Staggers Rail Act has achieved its main goals of (1) improving the financial health of Class I railroads—the nation's largest—and (2) rehabilitating U.S. rail facilities. In addition, the shipping industry has gained from lower rail rates and improved service. However, not all shippers have benefited because rates have not changed to the same degree for all commodities. Moreover, some shippers have complained about the Interstate Commerce Commission's relief procedures and have questioned whether the Commission has adequately protected their interests. In response to these concerns, the

Commission has adopted new policies and procedures since 1985. Despite the improvement of Class I railroads' financial condition since 1980, the industry is still not in robust health, and railroads continue to lag behind other transportation modes in profitability.

**Airline Scheduling:
Airlines' On-Time Performance**

GAO/RCED-90-154, 6/15/90

GAO found that airlines have adjusted the amount of time that they schedule for flights to develop schedules that are as short as possible yet still allow flights to be on time. However, the airlines' on-time performance, on average, has not improved since the reporting requirement began in September 1987. The purpose of on-time reporting requirements is to provide consumers with information on airlines' timeliness. Yet the on-time performance statistics neither indicate how late flights are nor provide information on why some flights are canceled. In addition, although airlines are permitted to exclude flights with mechanical problems from the on-time statistics, DOT does not verify that these flights experienced mechanical problems.

**Airline Competition:
Higher Fares and Reduced Competition at Concentrated Airports**

GAO/RCED-90-102, 7/11/90

What have been the effects of increased concentration on air fares and service at major airports around the country? In June 1989, GAO testified that fares, on average, rose more at concentrated airports (defined by GAO as an airport market in which one airline handles 60 percent of the enplanements or two airlines handle 85 percent) and were about 27 percent higher than at airports with more competition (GAO/T-RCED-89-37, 6/7/89). In this report, which extends that analysis to include the first two quarters of 1989, GAO found that fares remained close to 27 percent higher. Fares charged by the dominant carriers tended to rise as their airport market shares increased. Although more direct service to more places could be found after airport concentration, the number of routes on which carriers competed declined at most of the concentrated airports, and more routes were served by only one airline.

Air Travel:
Effectiveness of State Consumer Protection Efforts Varies

GAO/RCED-90-136, 8/29/90

GAO looked at how four states—California, New York, Ohio, and Texas—try to protect consumers from unfair and deceptive trade practices in the travel industry. Although all four states have broad statutes prohibiting unfair and deceptive trade practices and, in fact, three states also have narrower statutes prohibiting specific travel-related practices, several problems continue to plague the travel industry. First, some financially troubled tour operators have not delivered the services they promised. Second, consumers have lost millions of dollars to travel scams. Third, airline advertising practices sometimes violate state laws against unfair and deceptive trade practices. This report discusses the extent to which state action in response to these problems is limited by federal restrictions on the states' consumer protection role.

Airline Competition:
Industry Operating and Marketing Practices Limit Market Entry

GAO/RCED-90-147, 8/29/90

The Congress passed the Airline Deregulation Act of 1978 with the goal of promoting lower fares and good service through increased competition. Rising fares and a wave of mergers and bankruptcies, however, have refocused attention on airline industry competitiveness. GAO found that airport access and airline marketing barriers to entry have grown in recent years in ways not foreseen when the industry was deregulated. Airlines face several physical constraints in getting access to airports, including slots, gates, and noise restrictions. Even if airport access is not a problem, airlines might choose not to offer new service because marketing strategies of incumbent airlines inhibit nonincumbents from capturing traffic. For example, frequent flyer plans increase passenger loyalties and foreclose much of the business passenger market to new airlines. Although these barriers to entry pose a problem for the future of competition in the airline industry, the solution is not clear-cut. Some industry practices like code-sharing (agreements between jet airlines and commuter airlines to integrate service for connecting passengers) discourage entry but also benefit consumers. Although expanding airport capacity would help ease access to some airports, it might come too late to preserve the benefits of competition.

**Airline Deregulation:
Trends in Airfares at Airports in Small and Medium-Sized
Communities**

GAO/RCED-91-13, 11/8/90

What effect has airline deregulation had on fares at small and medium-sized communities? GAO discovered that average fares per passenger mile (yields)—adjusted for inflation—were more than 9 percent lower than in 1979 at airports serving small and medium-sized communities and about 5 percent lower at airports serving larger towns and cities. Even so, the average yields at these small town airports were about 9 percent higher than at the airports in larger communities. However, a lower average yield for the large-community airports is to be expected, given that the traffic volume is greater and the trip distance is longer at these airports. Overall, changes in fares are generally consistent with predictions that the removal of fare and route regulation would result in lower fares for travelers. GAO ventures that lower fares in smaller communities may be due to increased efficiencies arising from the growth of hub-and-spoke systems. Yet despite an overall decline in inflation-adjusted fares, not everyone has benefited or benefited to the same extent. Since deregulation, real fares have risen at some airports, and for those that have decreased, the reductions vary widely. Factors like hub-and-spoke systems, the presence of low-cost airlines, and airport concentrations are likely explanations for the differences.

**International Aviation:
Implications of Ratifying Montreal Aviation Protocol No. 3**

GAO/RCED-91-45, 12/3/90

The U.S. government has long been dissatisfied with the low level of compensation allowed by international law for injury or death suffered in international aviation accidents. Under current agreements to which the United States is a party, an airline is liable for a maximum of \$75,000 per passenger. A new agreement—Montreal Aviation Protocol No. 3—is now before the U.S. Senate for ratification, accompanied by a plan to provide supplemental compensation for victims of international aviation disasters. GAO concludes that, overall, American victims of international aviation accidents and their families would be better compensated under Protocol No. 3 than under existing international agreements. Claimants would no longer have to prove that the airline was at

fault before they received compensation, and incentives would be provided for airlines to settle claims quickly. Claimants' costs would be reduced because in many cases a trial would be avoided. In addition, the Protocol would raise the airlines' liability limit, provide funds for additional compensation of victims, and decrease the proportion of the damage awards that go to paying claimants' legal costs. The Protocol and the plan would also increase the likelihood that Americans' lawsuits would be tried in U.S. courts if compensation offers are unsatisfactory, resulting in U.S. standards of compensation being used in determining damage awards. Finally, GAO concludes that Protocol No. 3 is unlikely to harm airline safety. Adverse economic effects from aviation accidents and government safety regulations—not fear of litigation—are the primary incentives for airlines to operate safely.

**Airline Competition:
Passenger Facility Charges Represent a New Funding Source for
Airports**

GAO/RCED-91-39, 12/13/90

GAO believes that passenger facility charges (charges assessed on airline tickets to raise funds for airport capital projects) are not a panacea for all the problems faced by airports trying to expand capacity or promote competition but that they will help airports fund expansion projects; reduce noise; and enhance safety, security, and competitive access. Specifically, the charges will give airports more control over expansion decisions by reducing the airports' need for incumbent airlines to approve capital projects. Thus, a passenger facility charge will be especially useful at airports where one or two airlines control most of the traffic or most of the gates and other essential facilities through restrictive leases. Greater competition and greater capacity should, in GAO's view, yield lower fares and better service. Legislation allowing airports to levy passenger facility charges has been structured to protect the interests of consumers, while still affording each airport much flexibility in meeting its particular needs. The Congress has included safeguards in the Aviation Safety and Capacity Expansion Act of 1990 to prevent preexisting airport-airline agreements from limiting airports' ability to levy a passenger facility charge and to use the proceeds for eligible projects. In addition, the Department of Transportation needs to ensure that a variety of facilities can be built with passenger facility charge funds, airlines have competitive access to those facilities, and consumers are informed of the charges.

**Airline Competition:
Fares and Concentration at Small-City Airports**

GAO/RCED-91-51, 1/18/91

GAO examined fares and competition at 39 airports serving small cities (with populations of up to 300,000) like Sioux Falls, South Dakota, and Bismarck, North Dakota. Results indicated little disparity between fares at small-city and major airports. Passengers flying from small cities paid only 3 percent more than did passengers flying from major airports. Fares at concentrated small-city airports (that is, served by only one or two airlines) were only an average of 6 percent higher than were those at nonconcentrated small-city airports. However, GAO found that concentration at major airports has a strong influence over fares for passengers flying from small cities. Passengers going from a small-city airport to a major airport paid 34 percent more if the major airport was concentrated rather than nonconcentrated. If both airports were concentrated, fares were 42 percent higher than if both airports were not concentrated. This finding suggests that concentration at major airports can mean higher fares for passengers flying not only from them but also to them.

**Airline Competition:
Weak Financial Structure Threatens Competition**

GAO/RCED-91-110, 4/15/91

The recent deterioration of the airline industry's financial health has raised concern that as carriers are increasingly forced out of the industry, competition will decline and prices will rise. This deterioration could undermine the gains achieved for airline passengers since deregulation. Over the past decade, high debt levels and obstacles to competition have weakened the financial health of some carriers. More recently, the ongoing recession, the higher fuel prices resulting from the Iraqi invasion of Kuwait, and the reduction in demand resulting from the threat of terrorism have exacerbated the financial weakness. The financial strain on airlines will be increased by regulatory and legislative requirements for carriers to replace and renovate older aircraft. Existing financial problems have pushed two jet carriers out of business in the past 2 years and threaten the survival of several others. Competition could be reduced if several carriers cease operations. Certain policy options, such as improving carriers' access to airports and reducing barriers resulting from marketing practices, could help relieve some of the

competitive problems facing the industry and enhance the financial health of some of the weaker carriers. If some carriers do cease operations, close monitoring of the sales of their assets by the Departments of Transportation and Justice could help mitigate some of the loss of competition. Other options, such as reregulating fares and routes and allowing an increased level of foreign investment in U.S. carriers, either run counter to the intentions of deregulation or will require more analysis before they can be considered for implementation.

**Airline Competition:
Effects of Airline Market Concentration and Barriers to Entry on
Airfares**

GAO/RCED-91-101, 4/26/91

To analyze the effects on competition of airline market share, airport congestion, and barriers to entry, GAO developed an econometric model that examines how these and other factors, such as distance and traffic volume, influence an airline's fare and market share on a route. In terms of direct impacts, GAO's model results indicate that fares are higher on routes when any one of three barriers to entry is present. For slot limitations (airport limitations on take-offs and landings), fares were, on average, 4 percent higher. For majority-in-interest clauses (which often give certain airlines veto power over airport expansion), fares on routes to and from that airport were, on average, 3 percent higher. When a major airline had a code-sharing agreement (joint marketing with a commuter airline), the major airline's fares were, on average, 2 percent higher on routes involving that airport. When two or more of these barriers were present, fares were 5 to 9 percent higher. In addition, the model results indicated that (1) a 65-percent increase in an airline's market share on a route was associated with 6-percent higher fares on the route; (2) the higher the operating costs of the least-cost airline on a route, the higher were the fares of all airlines serving the route; (3) fares were higher on routes involving more congested airports; and (4) some competitive factors influence fares indirectly by increasing an airline's market share on a route. For example, airlines tend to have greater market shares and, therefore, higher fares when they have a large share of gates at the airports on a route or a dominant computerized reservation system in the cities on a route. The model results also indicated that some factors have substantially different impacts, depending on the distance of the route, the price-sensitivity of the passenger, and the size of the airline. Because no single factor has a large impact on fares, a policy designed to affect any single factor or entry barrier is not likely to have

a large impact on fares across all routes. However, such policies may have a substantial effect on certain kinds of routes or passengers.

Testimony

Air Fares and Service at Concentrated Airports, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation Senate Committee on Commerce, Science, and Transportation. GAO/T-RCED-89-37, 6/7/89

GAO examined air fares at 15 concentrated airports—those where one or two airlines dominate the traffic—and compared them with fares at 38 nonconcentrated airports. The analysis covers fares paid by about 25 million travelers between 1985 and 1988. GAO also reviewed changes in service levels at the concentrated airports during the 1985-88 period. GAO found that (1) dominant airline yields (average fares per passenger mile) at the 15 concentrated airports were consistently higher than yields at the 38 nonconcentrated airports; (2) some increases occurred in the number of places served and in the number of daily flights, but in many cases much of the increase was offset by reduced service offerings from nondominant carriers; (3) overall, deregulation has led to lower airline fares for most travelers; and (4) the establishment of hubs has allowed the airlines to realize important operating efficiencies, but growing concentration, especially at hub airports, has led to less competition on many routes.

Barriers to Competition in the Airline Industry, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, Senate Committee on Commerce, Science, and Transportation, GAO/T-RCED-89-65, 9/20/89; and before the Subcommittee on Aviation, House Committee on Public Works and Transportation, GAO/T-RCED-89-66, 9/21/89

Deregulation of the airline industry was predicated on the belief that low fares and good service would be ensured because the industry was inherently competitive. However, the success of deregulation depends in large measure on minimizing the barriers to new entry that can result when existing firms take actions that raise potential entrants' costs or erect other obstacles that bar entry entirely. To determine the extent to which essential facilities at airports are available for use by entrants, GAO conducted a survey of 185 airports. It also analyzed trends in slot transactions at four airports and surveyed a cross section of travel agents about airline marketing practices. GAO's work shows that, overall,

essential facilities at airports are often not readily available on competitive terms to entrants and that some airline marketing strategies can discourage market entry. Some factors are likely to have a greater impact than others, and some have benefits as well as costs. The Congress and the Department of Transportation may wish to begin reviewing policy options for reducing the anticompetitive potential of some of these practices while retaining most of their beneficial effects.

Effects of Airline Entry Barriers on Fares, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, Senate Committee on Commerce, Science, and Transportation. GAO/T-RCED-90-62, 4/5/90

In June 1989, GAO testified that airline yields—or fares per passenger-mile—at 15 concentrated airports in 1988 were 27 percent higher than at 38 nonconcentrated airports (GAO/T-RCED-89-37, 6/7/89). GAO considers an airport market concentrated if one airline handles 60 percent of the flights or if two airlines handle 85 percent. GAO updated its data and found that the gap is now 26 percent. A Department of Transportation study reached similar conclusions. GAO's work suggests that no single factor is responsible for the higher fares at concentrated airports but that the interaction of a number of factors allows carriers at these airports to charge higher fares. GAO has reservations about presuming all concentrated hubs to be anticompetitive. Increased capacity would be helpful, but GAO is concerned that increases in capacity alone will not solve all the problems of anticompetitiveness. GAO's testimony lists several policy options to reduce the anticompetitive effects of various industry operating and marketing practices.

International Aviation: Implications of Ratifying the Montreal Aviation Protocols, by Kenneth M. Mead, Director of Transportation Issues, before the Senate Committee on Foreign Relations. GAO/T-RCED-90-83, 6/19/90

The Montreal Protocols update rules established in the 1920s on the international air transportation of passengers, baggage, and cargo. The U.S. government has long been dissatisfied with the low levels of compensation permitted under international agreements, and the Protocols are designed to address these deficiencies. For example, the Protocols would increase the current limit on airline liability to about \$130,000 per passenger. GAO testified on how the Protocols would affect the level and timeliness of compensation for victims of international aviation

accidents and whether the Protocols might also affect the safety of international air travel.

Airline Competition: Passenger Facility Charges Can Provide an Independent Source of Funding for Airport Expansion and Improvement Projects, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-90-99, 6/19/90

Should airports be able to assess a direct charge on passengers in order to fund airport expansion and promote a more competitive environment? (Such direct charges, called passenger facility charges, were prohibited at the time of this testimony.) GAO testified on the need for legislation authorizing such direct charges and on ways to ensure that funds generated would be used for airport capacity expansion and not diverted for other uses. GAO believes that direct charges would give airports an important alternative to reliance on airline funding or guarantees to build and expand airport capacity. Legislation allowing airports to levy passenger facility charges could be structured to protect the interests of consumers while still affording each airport maximum flexibility in meeting its particular needs. Safeguards could also be included in the legislation to prevent pre-existing agreements between airports and airlines from limiting the effectiveness of passenger facility charges. Thus, these direct charges could help shift more control over airport development, expansion, and use decisions from airlines to airports.

Airline Competition: Impact of FAA Reauthorization Legislation on Passenger Facilities Charges and Trust Fund Spending, by Kenneth M. Mead, Director of Transportation Issues, before the California State Commission on Aviation. GAO/T-RCED-90-104, 8/13/90

The California legislature recently considered a series of bills aimed at improving access to major airports in the state; the Congress is also concerned about whether there is enough competition among airlines at the nation's major airports. GAO testified on the subject of airline competition and on the implications of proposed Federal Aviation Administration reauthorization legislation for enhancing airline access to airports. GAO supports provisions in H.R. 5170 (101st Cong.) that would allow airports to levy passenger facility charges and to increase and liberalize spending from the Airport and Airway Trust Fund. These are not panaceas for the problems facing competition in the airline industry, however. In GAO's view, solutions to capacity limits must also address the

problems of aircraft noise and the need to build new airports. Solutions to problems arising from anticompetitive practices must also address airline marketing practices that make it hard for airlines to successfully enter new markets even when airport facilities are available.

U.S. Airlines: Weak Financial Structure Threatens Competition, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Aviation, House Committee on Public Works and Transportation. GAO/T-RCED-91-6, 2/6/91

The deteriorating financial condition of the U.S. airline industry over the past several years has raised concern that as carriers go bankrupt, competition will decline and prices will rise. GAO believes that action must be taken now to preserve effective competition in the airline industry. GAO testified that although the need for such action has been apparent for at least 2 years, the declining fortunes of several carriers make this need even more imperative. Yet the Department of Transportation (DOT) continues to deliberate—as it has for over a year—new rulemakings on slots and computerized reservation systems, and even proposed rules are likely months away. GAO notes that continued delay by DOT may undermine the effectiveness of the reforms in preserving competition. In GAO's view, steps to encourage use of preferential-use gate leases at airports (allowing carriers other than the primary lessee to use gates and other facilities when they are not needed by the primary carrier) and to restrict frequent flyer plans should also be considered. Although opening the U.S. market to foreign competition might offer some long-term hope for improved competition, such changes would be most appropriate in the context of a reciprocal agreement for improved access to foreign markets. GAO offers the caveat that improved competition will be to no avail if firms continue to burden themselves with excessive debt.

Coast Guard and Maritime Administration Efficiency and Effectiveness

Coast Guard and Maritime Administration Efficiency and Effectiveness

Inland Oil Spills:

Stronger Regulation and Enforcement Needed to Avoid Future Incidents

GAO/RCED-89-65, 2/22/89

The Clean Water Act prohibits the discharge of oil into navigable waters and requires the Environmental Protection Agency (EPA) to regulate the oil industry to prevent oil spills and conduct research on the cleanup of spills. The National Contingency Plan, which implements portions of the act, makes EPA and the Coast Guard chiefly responsible for performing federal cleanups when the party responsible for the spill cannot or will not do the cleanup. These agencies are also responsible for monitoring private party cleanups. EPA's Oil Pollution Prevention regulations recommend that tanks be constructed of appropriate materials and be tested periodically for integrity and that tank operators take precautions to contain spilled oil. However, the regulations do not require that (1) tanks be constructed and tested to meet industry or other specified standards, (2) oil storage facilities plan how to react to an oil spill that overflows facility boundaries, and (3) tank storm water drainage systems be controlled to prevent oil from escaping through them. EPA has not established management controls for its inspection program to ensure that the right facilities are inspected, inspections are well performed, and violations are deterred by appropriate sanctions. In addition, EPA and the Coast Guard do not recover costs of monitoring a spiller's cleanup, although these costs can be substantial. GAO recommends that the Congress amend the act to explicitly authorize the federal government to recover these costs. In addition, EPA needs to strengthen its regulations and implement policies for conducting and reporting inspections and fining violators.

Port Development:

Sponsors Have Not Used User Fee Financing to Date

GAO/RCED-89-125, 5/4/89

Section 208 of the Water Resources Development Act allows nonfederal interests, such as state and local authorities, to levy port or harbor dues or user fees on shippers to recover the nonfederal share of harbor navigation improvement project costs, including the costs of construction, operation and maintenance, and provision of emergency response services. The section also provides that GAO audit the operations of nonfederal interests that elect to use this authority. To date, GAO has not

made such audits because section 208 cost recovery has not been pursued by those nonfederal interests whose projects were eligible. Instead, these interests are using other bases, such as general revenues, for selling securities to finance their share of project costs. Among the reasons why cost recovery is not being used are that (1) dues cannot be charged until the project or a usable segment has been completed; (2) only those vessels that benefit from the particular project, rather than all vessels using the ports, can be charged the dues; and (3) a port charging the dues may be put at a competitive disadvantage with respect to other ports not charging such dues.

Customs Service:

Administration of Tariff on Foreign Repairs to United States Flag Vessels

GAO/RCED-89-152, 5/26/89

To protect the U.S. shipyard repair capability for national defense purposes, the U.S. Customs Service is authorized to levy a 50-percent tariff on the cost of repairs made to U.S.-flag vessels in foreign shipyards. Customs Service reports show that collections generally increased—from about \$700,000 in fiscal year 1969 to \$14.6 million in fiscal year 1988. Customs believes that the effects of (1) legislative exemptions of specific categories of repair work, (2) court rulings narrowing the definition of “repair,” and (3) the logical extensions of the legislative exemptions and court rulings by Customs have reduced the applicability of the vessel repair tariff. Although Customs had tabulated the total value of dutiable repairs, neither it nor other agencies that GAO contacted, such as the Department of Transportation’s Maritime Administration and the Internal Revenue Service, had maintained data on the total value of all repairs performed on U.S.-flag vessels in foreign shipyards.

Drug Smuggling:

Capabilities for Interdicting Private Aircraft Are Limited and Costly

GAO/GGD-89-93, 6/9/89

Federal efforts to control airborne drug smuggling increased dramatically during the 1980s. These efforts, known as air interdiction programs, which are the joint responsibility of the U.S. Customs Service and the Coast Guard with assistance from the Department of Defense (DOD), are aimed at smugglers using private aircraft to transport illegal

drugs from foreign countries into the United States. Federal spending on air interdiction programs (excluding the costs of DOD support) increased from about \$18 million in 1982 to an estimated \$200 million in fiscal year 1989. Air interdiction programs have resulted in the seizure of substantial amounts of drugs, but the seized amounts are small compared with the amounts successfully smuggled into the United States. Gaps exist in the radar coverage that the present air interdiction detection network provides. In addition, all radar detection systems have inherent technical constraints that limit their ability to detect the small aircraft typically used to smuggle drugs. Decisions about providing funds for additional air interdiction efforts should not be made without considering whether these funds could be put to more effective use on some other aspects of the nation's war on drugs. GAO is not convinced that spending more on air interdiction is the best use for additional funds, but believes that the data are insufficient to definitively conclude how funds can best be spent fighting the war on drugs.

**Federal Drug-Related Efforts:
Budget Information by Strategy**

GAO/GGD-89-96FS, 6/16/89

This fact sheet contains information on federal agencies' budget authority and outlays by strategy regarding drug law enforcement, abuse, and treatment. The Coast Guard, which is prominent in the interdiction strategy, is one of the agencies included. The budgetary information was obtained from the Office of Management and Budget for fiscal years 1981 through 1989.

**Coast Guard:
Adequacy of Preparation and Response to Exxon Valdez Oil Spill**

GAO/RCED-90-44, 10/30/89

GAO believes that the response to the Exxon Valdez grounding was clearly inadequate in containing and recovering the spilled oil. No one had realistically prepared for a spill of that size in Prince William Sound, and a similar lack of preparedness may well exist elsewhere in the United States. An important reason for this national unpreparedness is that no single designated leader or authority is responsible for ensuring the adequacy of preparations. Concerns have also surfaced about current oil spill containment technology and about the risks associated with water transportation of hazardous cargo. GAO believes that

improvement of prevention measures should be given high priority. As a decision is made on the best course of action, leadership will be needed to avoid a scattered approach that leaves the nation little better than it was before. Increased funding will also be needed to support improved prevention and response capabilities.

**Coast Guard:
Preparation and Response for Oil Spills in Philadelphia and New York Ports**

GAO/RCED-90-83, 1/26/90

In the Philadelphia and New York ports, as was the case in Prince William Sound, neither industry nor the Coast Guard are prepared to respond to major oil spills (i.e., contain the oil and remove it from the water). This unpreparedness is due to a lack of (1) specificity in industry and Coast Guard plans on how to deal with spills of various sizes and (2) Coast Guard authority to require ship owners and operators to have contingency plans or to require changes in existing plans. GAO believes that recent experiences indicate that the priority for dealing with major oil spills should be to prevent them from occurring in the first place. Experiences in Prince William Sound and Philadelphia and across the nation, however, show that much needs to be done to improve prevention measures, such as monitoring and guiding ship movements and using harbor pilots or vessel escorts. Industry and government efforts are now under way to improve prevention and response capabilities, but achieving greater protection will require more money. Leadership will also be needed to pull together the various options to make national improvements, and GAO believes that a single entity within the federal government should assume this role.

**Coast Guard:
Federal Costs Resulting From the Exxon Valdez Oil Spill**

GAO/RCED-90-91FS, 1/26/90

When the Exxon Valdez oil spill occurred in Alaska's Prince William Sound in March 1989, 10 million gallons of oil were released—the largest oil spill in U.S. history. How much will the federal government have to spend to clean up the Exxon Valdez spill? In its ongoing work, GAO is determining (1) what costs federal agencies estimate they have incurred, (2) whether the agencies had procedures to seek reimbursement from Exxon, and (3) the extent to which these agencies have been

reimbursed. This fact sheet focuses on estimated costs reported by federal agencies as of September 30, 1989, and reimbursements received through November 15, 1989.

**Coast Guard:
Better Process Needed to Justify Closing Search and Rescue
Stations**

GAO/RCED-90-98, 3/6/90

Coast Guard search and rescue stations play an important role in protecting the lives of commercial fishermen, recreational boaters, and others involved in accidents on the nation's waterways. In January 1988, reacting to an expected shortage of funds, the Coast Guard decided to close nine of its stations and to curtail operations at six others. The Congress, however, told the Coast Guard to reopen the closed stations pending a GAO review of the decision. GAO found that the Coast Guard's 1988 attempt to close or reduce operations at the stations was unsuccessful because its reasons for doing so were not convincing. At the time of the decision, the Coast Guard lacked policies and procedures on what criteria should be used during the decision-making process, how the criteria should be applied, and how recommendations should be developed or documented. The Coast Guard has experienced funding shortages before and has tried to reduce its station activities without much success in recent years. Because this issue is politically sensitive, Members of Congress must be convinced that the Coast Guard's decisions are based on a sound process that includes criteria that adequately address its search and rescue as well as other missions. GAO believes that the Coast Guard should apply the criteria consistently to all stations nationwide, ensure that the data are complete and accurate, and document the decision process.

**Tax Policy:
Uncertain Impact of Repealing the Deferral for Reinvested Shipping Income**

GAO/GGD-90-35, 3/26/90

Before passage of the Tax Reform Act of 1986, shipping income that had been earned outside the United States and reinvested in shipping assets could be excluded from income subject to taxation in the year earned. Today a higher percentage of foreign-based shipping income is subject to immediate taxation. GAO believes that this increase is largely due to the

1986 act's repeal of the deferral for shipping income. Because the parent corporation pays tax on its total operations, GAO could not determine the actual amount of tax revenue generated from foreign-earned shipping income. However, even though a larger percentage of the income is subject to taxation, tax revenue may have fallen in 1987 compared with 1984 because of lower corporate tax rates and a decline in reported foreign-earned shipping profits. The impact of the repeal on owners' decisions to reinvest in ships is unclear; however, GAO found no evidence that the deferral's repeal has affected the number of U.S.-owned foreign flag ships to date. (The Department of Transportation's Maritime Administration maintains data on such ships.) GAO also reviewed the military's plans for these ships and found that it plans to use 124 of the 328 U.S.-owned oceangoing foreign flag ships for wartime sealift. There are, however, unresolved issues—including U.S. requisitioning authority—concerning the availability of these ships in wartime.

**Coast Guard:
Strategic Focus Needed to Improve Information Resources
Management**

GAO/IMTEC-90-32, 4/24/90

Whether it is justifying vessel boardings, responding to oil spills, closing facilities in response to budget cuts, or tracking hazardous waste violations at its own stations, the Coast Guard needs, but in many cases does not have, accurate and timely information. GAO found three main weaknesses that contribute to the Coast Guard's information resources management problems. First, top-level leadership and planning in information resources management is lacking. Second, the absence of a strategic information resources information plan makes it difficult to ensure that ongoing and proposed systems development projects logically support agency missions and goals. Third, the evaluation, development, implementation, and review of information systems is jeopardized by a lack of information resources management policies, standards, and procedures. By creating a solid information resources management framework that corrects these problems, the Coast Guard will be in a better position to identify and obtain the information it needs to accomplish its missions.

**Coast Guard:
Magnitude of Alcohol Problems and Related Maritime Accidents
Unknown**

GAO/RCED-90-150, 5/24/90

Every year U.S. and foreign ships carry billions of gallons of oil and other hazardous cargo in and out of U.S. ports. Because alcohol abuse could contribute to accidents involving these ships, the Coast Guard is required to establish intoxication regulations for the maritime industry. However, GAO found that the Coast Guard does not know the magnitude of alcohol problems in the maritime industry. Because the Coast Guard does not keep relevant statistics, it can neither measure the effectiveness of its efforts to prevent alcoholics from serving on commercial vessels nor evaluate how to better allocate its resources to reduce the number of alcohol-related accidents. Although regulations allow investigative officers to test blood alcohol levels of crew if there is a reasonable cause, very few tests have been done in the past 2 years. Officers now lack the training and equipment to administer intoxication tests at maritime accident sites. GAO believes that the Congress should consider granting the Coast Guard (1) authority to withhold or revoke the initial merchant mariner document—the official paper needed to work on U.S. commercial vessels—from alcohol abusers and (2) access to the National Driver Registration to verify applicants' statements on alcohol-related convictions. GAO believes that further improvements could be made if the Coast Guard availed itself of FBI checks for upgraded documents and license upgrades or renewals. The Coast Guard's medical forms should also specifically require information on alcohol use.

**Coast Guard Acquisitions:
Formal Criteria Needed to Ensure Project Manager Qualifications**

GAO/RCED-90-178, 6/19/90

The Coast Guard buys ships, aircraft, and other major systems to carry out its wide-ranging missions. These missions include enforcing federal laws on the high seas and U.S. waters, maintaining aids to maritime navigation, protecting the marine environment, conducting search and rescue operations, and icebreaking. GAO assessed Coast Guard efforts to increase the qualifications and tour of duty, or tenure, of personnel chosen to manage the acquisition of its major systems. GAO found that the Coast Guard had established a screening panel to select qualified officers to serve as project managers and had sent many of the selected

officers to a 20-week acquisition management training course. However, officers do not have to have acquisition experience or training to be selected. In addition, the average tenure of the current project managers expected to transfer to new assignments in fiscal year 1990 is 3 years. GAO believes that because project management requires an extensive knowledge of procurement practices, retaining these managers longer would allow the Coast Guard to more effectively use their experience and training.

**Cargo Preference Requirements:
Their Impact on U.S. Food Aid Programs and the U.S. Merchant
Marine**

GAO/NSIAD-90-174, 6/19/90

U.S. cargo preference laws, which the Maritime Administration has a role in administering, require significant portions of government cargo to be shipped on U.S.-flag vessels. GAO looked at how these laws have affected (1) the costs and timeliness of U.S. food aid shipments and (2) the amount of government cargo transported on U.S.-flag vessels. This report also provides information, obtained from the Maritime Administration, on changes in the number of U.S. merchant marine vessels and support personnel over the past 10 years.

**Coast Guard:
Additional Efforts Needed to Clean Up Hazardous Waste Sites**

GAO/RCED-90-164, 7/6/90

The Coast Guard, along with other federal agencies, is subject to environmental laws that require it to regulate and manage its hazardous waste now being generated—such as used batteries and spent solvents and paints—and to clean up sites where improper waste disposal occurred. In 1987 GAO issued a report (GAO/RCED-87-153, 7/24/87) describing the slow progress of federal agencies, including the Coast Guard, in meeting their environmental responsibilities. Since then, the Coast Guard has made progress in identifying and investigating its potential hazardous waste locations, but most of its cleanup work remains to be done. For example, while the Coast Guard has cleaned up 20 sites, the number of Coast Guard locations still requiring cleanup has increased from 15 to 20. In addition, the Coast Guard does not have complete information on the nature of environmental violations at its

facilities that now handle hazardous waste or on the costs of correcting the violations.

**Coast Guard:
Reorganization Unlikely to Increase Resources or Overall
Effectiveness**

GAO/RCED-90-132, 7/12/90

Except during time of war or national emergency—when it operates as part of the Navy—the U.S. Coast Guard essentially functions in a civilian capacity as part of the Department of Transportation. During the 1980s, the Coast Guard was a frequent subject of reorganization proposals. Much of the impetus for these proposals stemmed from a desire to use the Coast Guard to advance particular policies and to increase its funding. This report presents GAO's analysis of selected proposals for alternative organizational placement of the Coast Guard. Although moving the Coast Guard or making it independent might enhance its effectiveness in certain functional areas, such a step, in GAO's view, is unlikely to increase the resources available to it or to enhance its overall effectiveness. Such an action might, in fact, erode the Coast Guard's unique dual role and impair its ability to carry out diverse missions in areas like transportation, defense readiness, and marine environmental protection. GAO discusses the recent funding history of the Coast Guard and evaluates the likely impact of organizational alternatives on the Coast Guard's essential character, multimission capabilities, and funding. GAO also discusses actions the Coast Guard has taken and will need to take to ensure optimal use of the resources available to it.

**Developing a Federal Drug Budget:
Implementing the Anti-Drug Abuse Act of 1988**

GAO/GGD-90-104, 8/23/90

The process used to formulate the federal drug budget is evolving. For fiscal years 1981 through 1990, the Congress did not require the preparation of an annual drug budget, although the Office of Management and Budget did give the Congress and executive branch agencies a summary of the drug budgets of federal agencies. The Anti-Drug Abuse Act of 1988, however, required the Office of National Drug Control Policy (ONDCP) to prepare an annual federal budget and outline a process for formulating a drug budget. ONDCP issued its first comprehensive federal drug budget in January 1990. ONDCP officials said that they will continue

to refine the guidelines to prepare the drug budget and expect that it may take 2 to 3 years before the process is running smoothly. The drug budget data GAO reviewed at five agencies—the Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services; the Department of Education; the Department of Defense; the Federal Bureau of Investigation, Department of Justice; and the Coast Guard, Department of Transportation—usually consisted of estimates and could not be tracked or monitored through agency accounting systems because drug programs are generally combined with other programs in an account. GAO believes that having the capacity to track drug expenditures with a reasonable level of precision is essential if meaningful evaluations are to be made of the many approaches now being used to confront the drug problem.

**Coast Guard:
Anti-Reflagging Act Has Mixed Impact on U.S. Fishing and Ship
Rebuilding**

GAO/RCED-91-27, 10/25/90

GAO evaluated the effects of the Commercial Fishing Industry Anti-Reflagging Act of 1987, which was intended to ensure control by Americans of the U.S. fishing industry in U.S. coastal waters. However, GAO found that the act has done little to ensure increased American control of the U.S. fishing industry because of a Coast Guard interpretation of the act's grandfather exemptions for vessels licensed before July 28, 1987. The Coast Guard believes that the exemptions remain with the vessels even if they are later sold to foreign-owned companies. This interpretation gives foreign-owned companies continued access to U.S. fisheries. By contrast, GAO concludes that the act's prohibitions against foreign rebuilding of vessels used in U.S. fisheries are likely to have a significant impact, because the grandfather exemptions that allowed foreign rebuilding are tied to specific deadlines, all of which have passed. Generally, vessels rebuilt in a foreign country were required to be delivered to the owners before July 28, 1990, in order to be eligible for U.S. fishery privileges. Because the deadlines have passed, owners who want to rebuild their boats and who wish to operate in U.S. fisheries will likely rebuild in U.S. shipyards.

**Drug Interdiction:
Funding Continues to Increase but Program Effectiveness Is
Unknown**

GAO/GGD-91-10, 12/11/90

Drug interdiction programs established by the Coast Guard, Customs Service, and Border Patrol, with support provided by the Department of Defense, are designed to stop smugglers and/or their shipments by focusing on the mode of transportation. These efforts are thus referred to as land, marine, air, and commercial cargo interdiction programs. GAO examines (1) the available measures of performance for drug interdiction programs and whether performance can be compared between different programs, (2) funding for the interdiction programs, (3) quantities of drugs seized through the interdiction programs, and (4) the relationship between drug seizures and the use of advance information (prior intelligence) on the drug shipments.

**Coast Guard:
Millions in Federal Costs May Not Be Recovered From Exxon
Valdez Oil Spill**

GAO/RCED-91-68, 3/5/91

As of June 30, 1990, the federal government reported spending almost \$154 million to help clean up the Exxon Valdez oil spill. However, the federal government may recover only \$123 million, or about \$31 million less than reported. The federal government also will not recover millions of dollars more in spill-related costs that went undocumented and unreported. This report discusses (1) the reasons for the limited recovery of costs and (2) the need for improvements in the reimbursement process.

Testimony

Coast Guard Icebreaker Requirements, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations. GAO/T-RCED-89-24/12/89

On the basis of current information, GAO cannot conclude that the new icebreaker, which the Coast Guard plans to procure, is either needed or unneeded. GAO believes that before the decision to procure a new icebreaker is made, a number of critical uncertainties need to be addressed and resolved. These uncertainties relate to whether (1) the projected

needs used to justify the new icebreaker are accurate in view of user agencies' funding and current plans and perspectives, (2) alternative ways of meeting the icebreaker needs have been adequately analyzed, and (3) the current design for the new icebreaker will be the most appropriate for meeting anticipated future needs. To resolve the uncertainties, important policy decisions must be made about the management, funding, and use of the nation's icebreaker fleet. The President's report on these, which was to be submitted to the Congress on October 1, 1988, has not been completed.

Capabilities for Interdicting Airborne Drug Smugglers Are Limited and Costly, by Arnold P. Jones, Director of Administration of Justice Issues, before the Subcommittee on Permanent Investigations, Senate Committee on Government Operations. GAO/T-GGD-89-28, 6/9/89

According to GAO, the air interdiction programs of the Customs Service, the Coast Guard, and the Department of Defense (DOD) units involved in such efforts are very costly and have limited capabilities. Federal spending on air interdiction programs, not including funds for DOD assistance to civilian air interdiction agencies, increased from about \$18 million in 1982 to an estimated \$200 million in fiscal year 1989. Although air and other interdiction programs have resulted in the seizure of substantial amounts of drugs, the seized amounts are small compared with the amounts successfully smuggled into the United States. The Customs Service and the Coast Guard have plans for coordinating air interdiction detection activities with their interdiction response assets. According to GAO, it is not convinced that spending more on air interdiction is the best use for additional funds, but data are insufficient to draw a definitive conclusion as to how funds can best be spent fighting the war on drugs.

Adequacy of Preparation and Response Related to Exxon Valdez Oil Spill, by Victor S. Rezendes, Associate Director for Transportation Issues, before the Subcommittee on Coast Guard and Navigation, House Committee on Merchant Marine and Fisheries. GAO/T-RCED-89-59, 8/10/89

This testimony summarizes the findings that GAO reported in Coast Guard: Adequacy of Preparation and Response to Exxon Valdez Oil Spill (GAO/RCED-90-44, 10/30/89), which is described above.

The Coast Guard's Cleanup of Hazardous Waste Sites, by Victor S. Rezendes, Associate Director for Transportation Issues, before the Subcommittee on Coast Guard and Navigation, House Committee on Merchant Marine and Fisheries. GAO/T-RCED-90-6, 11/1/89

GAO concluded that the Coast Guard still has most of its major hazardous waste cleanup work to do—an effort that will cost millions and will take decades to complete. Yet the Coast Guard cannot confidently estimate long-term cleanup costs until it has assessed and investigated potential hazardous waste locations. Although Coast Guard data suggest it is complying with hazardous waste regulations, GAO is concerned Coast Guard is not collecting the type of information needed to long-term budget requests. The Coast Guard is planning to reiss reporting instructions in order to stress the importance of report. lations and related costs. If successful, this effort could help ensure the Coast Guard has the information necessary to estimate future funding needs.

P.L. 480 Title I Transportation Issues, by Allan I. Mendelowitz, Director of International Trade, Energy, and Finance Issues, before the Senate Committee on Agriculture, Nutrition, and Forestry. GAO/T-NSIAD-90-8, 11/7/89

Earlier GAO work identified various problems in the way the U.S. Department of Agriculture (USDA) manages ocean transportation of U.S. agricultural commodities bought by developing countries under title I of Public Law 480. (The Maritime Administration's role in the transportation process includes ensuring that the rates offered by U.S.-flag vessels are fair and reasonable and reimbursing USDA for increased ocean freight differential costs associated with increasing from 50 percent to 75 percent the amount of agricultural commodities under specified programs that must be carried on U.S.-flag vessels.) GAO has been concerned for years that USDA's transportation costs are not as low as possible and that USDA's procedures and controls have not ensured adequate integrity of the transportation procurement process. GAO testified that although USDA had taken some corrective action in response to GAO's earlier work, such as instituting open bidding, the following transportation issues still warrant consideration: delays in payment of vessel owners by recipient countries, which increase shipping costs; the clustering of tenders, which creates peak demand and increases shipping costs; the role of country agents, which increases the risk of irregularities in the program and inadequate government control over the program.

Strategic Focus Needed to Improve the Coast Guard's Information Resources Management, by JayEtta Z. Hecker, Director of Resources, Community, and Economic Development Information Systems, before the Subcommittee on Coast Guard and Navigation, House Committee on Merchant Marine and Fisheries. GAO/T-IMTEC-90-7, 4/24/90

This testimony summarizes GAO's 4/24/90 report entitled Coast Guard: Strategic Focus Needed to Improve Information Resources Management (GAO/IMTEC-90-32), which is described above.

Cross-Modal Transportation Issues

Cross-Modal Transportation Issues

Employee Drug Testing: DOT's Laboratory Quality Assurance Program Not Fully Implemented

GAO/GGD-89-80, 9/29/89

Federal agencies are required to establish drug-testing programs for employees in sensitive positions in accordance with scientific and technical guidelines issued by the Department of Health and Human Services (HHS). GAO found that although the Department of Transportation's (DOT) program was required to be in full compliance with these guidelines by July 11, 1988, it was not until July 19, 1989, that DOT brought its program into compliance with requirements for blind performance-testing procedures to monitor the accuracy and reliability of laboratory analyses results. DOT's noncompliance demonstrates the need for continuing oversight and independent monitoring of federal drug-testing programs. The HHS official primarily responsible for the HHS guidelines said that he was unaware of DOT's noncompliance—which he considered a serious deviation from the HHS guidelines—until GAO brought it to his attention.

Transportation Noise: Federal Control and Abatement Responsibilities May Need to Be Revised

GAO/RCED-90-11, 10/12/89

Transportation noise affects millions of people living near airports, rail lines, and highways. Although psychological and physiological harm, including hearing loss, may result from such noise, the more common effect of such noise is to diminish peoples' quality of life. The Federal Aviation Administration (FAA) estimates that 3.2 million people live in areas unfit for residential use because of aircraft noise. Although comprehensive data are unavailable, many more people are subjected to noise levels that may significantly interfere with sleep, conversation, and relaxation. In 1982 the Congress eliminated funding for the Environmental Protection Agency's (EPA) noise program, reasoning that noise control benefits are highly localized and the program could be taken up by state and local governments. The major transportation focus of EPA's noise program was on controlling noise sources and providing technical assistance to state and local governments. Following the elimination of program funding, other federal, state, and local agencies continued some activities to control transportation noise. However, the federal agencies,

except for FAA for aircraft noise, lack EPA's authority to regulate transportation noise sources. More importantly, because the Congress did not rescind the Noise Control Act and EPA's noise standards when it eliminated funding for the program, federal preemption remains in effect. This means that state and local regulatory authorities cannot impose their own noise emission controls for equipment and operations where EPA standards were issued and remain in effect. Further, because of other priorities, some states have not expanded their noise control offices to compensate for the assistance EPA had provided.

Drug Testing:

Management Problems and Legal Challenges Facing DOT's Industry Programs

GAO/RCED-90-31, 11/27/89

Concerned about drug use in the transportation industry, in 1989 the Department of Transportation (DOT) began requiring over 200,000 employers to test 4 million private-sector transportation workers in safety-sensitive and security-related positions. GAO discusses (1) the status of DOT's private-sector drug-testing programs; (2) DOT's program implementation; (3) the present legal challenges to DOT's regulations; and (4) proposed legislation that would impose drug testing for certain private-sector transportation industry workers, comparing the bills' provisions with DOT's drug-testing regulations.

Transportation:

Status of GAO's Open Recommendations on Transportation Policies and Programs

GAO/RCED-91-112, 4/10/91

This report, building on GAO/OP-91-1, summarizes the findings and open recommendations resulting from GAO audits and other work in the Department of Transportation and the National Railroad Passenger Corporation (Amtrak) for which satisfactory legislative or administrative actions had not been completed as of September 30, 1990. The report (1) discusses the impact of GAO work in the transportation area over the past few years and the key open recommendations; (2) shows the status of actions as of September 30, 1990, on recommendations in GAO products issued from January 1985 through September 1990; (3) provides details (and updates, where available) on the 142 GAO recommendations in the transportation area that were open as of September 30, 1990; and

(4) includes indexes of the recommendation addressees and the committees of jurisdiction for the open recommendations.

Testimony

Transportation Trust Funds, by Victor S. Rezendes, Associate Director for Transportation Issues, before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations. GAO/T-RCED-89-36, 5/11/89

The major federal transportation trust funds—the Highway Trust Fund and the Airport and Airway Trust Fund—have large unspent balances that highway and aviation user groups claim should be spent on additional transportation projects. However, these balances are needed to meet existing or imminent commitments. The question of trust fund balances also raises the larger issue of the use of trust fund monies to ease the size of the federal deficit. GAO believes that the federal budget should be restructured to distinguish between operating expenses and capital spending for general, trust, and enterprise activities. Deficit reduction targets could then be set to correspond with the revised budget structure.

Issues Related to DOT's Fiscal Year 1991 Budget Request, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, Senate Committee on Appropriations. GAO/T-RCED-90-72, 4/26/90

GAO testified on selected aspects of the Department of Transportation's fiscal year 1991 budget request. The cost of meeting transportation needs is staggering and is certain to exceed the level of federal funding being programmed. The administration is aware of this fact and has proposed shifting the burden of payment to the states and localities, especially in the surface transportation and airport areas. In light of continuing budget constraints, an urgent need exists to ensure that federal transportation dollars are well spent. GAO believes that establishing goals and priorities can help in the Federal Aviation Administration's (FAA) air traffic modernization program, interstate highway construction, and improvement of rail service. Since the Congress faces important budget decisions on FAA, the interstate highway program, and Amtrak, GAO provides an overview of GAO work in each of these areas.

Operations of and Outlook for the Transportation Trust Funds, by John W. Hill, Jr., Associate Director for Transportation Issues, before the

Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation. GAO/T-RCED-90-78, 5/8/90

GAO focuses on the operations of the Highway and Airport and Airway Trust Funds, including yearly revenue and expenditure streams; reasons for buildups in the funds' balances; and GAO's observations on the process for drawing down the balances. Unfortunately, the federal budget deficit has changed the role of trust funds. Today, trust fund balances are not being spent for their intended purpose but are being used instead to mask the deficit. As a result, any accelerated drawdown of the trust fund balances can be accomplished only by increasing the deficit or at the expense of other federal programs.

Major Acquisitions: Top Management Attention Needed to Improve DOT's Acquisition Process, by Kenneth M. Mead, Director of Transportation Issues, before the Subcommittee on Transportation and Related Agencies, House Committee on Appropriations. GAO/T-RCED-91-45, 4/24/91

Successful acquisition of new equipment is crucial to the timely implementation of modernization plans in both the Federal Aviation Administration (FAA) and the Coast Guard. The experiences of FAA and the Coast Guard in acquiring major systems illustrate both the risks involved and the importance of taking all possible steps to minimize these risks. FAA has experienced substantial cost increases and delays in modernizing the air traffic control system. Until recently, FAA did not follow federal acquisition guidance aimed at reducing cost, schedule, and performance risks. Acquisitions often proceeded before the agency knew precisely what its needs were, whether the design was cost-effective, and whether the equipment would work in the day-to-day environment. Similar acquisition problems in the Coast Guard's Patrol Boat Replacement project can be traced to weaknesses in identifying needs. The Coast Guard failed to adequately consider the size of the patrol boat fleet and the mix of vessel types and capabilities that would satisfy its needs at the lowest possible cost. In addition, top Coast Guard and Office of the Secretary of Transportation officials did not always play the critical, questioning role needed to ensure the soundness of acquisition decision-making. An important way of controlling and monitoring acquisitions is for budgeting to be linked to the various phases of the acquisition process. More accurately reflecting the status of an acquisition in an agency's funding request would provide a means of communicating cost, schedule, and progress to decisionmakers.

Saint Lawrence Seaway Development Corporation

Saint Lawrence Seaway Development Corporation

Financial Audit:

Saint Lawrence Seaway Development Corporation's 1988 Financial Statements

GAO/AFMD-89-101, 9/29/89

GAO looked at the Saint Lawrence Seaway Development Corporation's financial statements as of December 31, 1988, and found that they present fairly, in all material respects, the Corporation's financial position and the results of its operations and cash flows. GAO is required to audit the Corporation at least once every 3 years. To help fulfill this responsibility, GAO contracted with Arthur Andersen & Co. to conduct the financial audit. The report by Arthur Andersen & Co. on internal accounting controls disclosed no condition believed to be a material weakness. The auditors' report on compliance with applicable laws and regulations disclosed nothing to indicate that the Corporation had not complied with such laws and regulations.

Railroad Retirement Board

Railroad Retirement Board

Railroad Retirement: Future Rail Employment and Trust Fund Solvency

GAO/HRD-89-30, 4/5/89

The rail retirement program has been vulnerable in recent years to recurring financial crises caused largely by steady declines in the rail industry's work force. Rail employment declined from 1,680,000 in 1945 to 307,000 at the end of 1988, principally because of the losses of passengers and freight traffic to other transportation modes. A number of forces are at work that likely will continue this decline to 200,000 or less. Despite lower future employment levels, current projections show that the railroad retirement account should be able to pay benefits into the first decade of the next century. These projections show an improvement in the program's financial status because of a 1988 payroll tax increase, the extension of federal contributions from general revenues, and changes in certain actuarial assumptions.

Railroad Retirement Board: Internal Controls for Unemployment Program Improving, but Gaps Remain

GAO/HRD-90-42, 5/3/90

The Railroad Retirement Board is an independent federal government agency that administers retirement-survivor and unemployment-sickness benefits programs for the nation's railroad workers. GAO found that internal controls for the unemployment-sickness program are extensive and have detected fraud and payment errors in the past. Some gaps exist, however, in separation of duties, control over computer documents, verification of physician certificates, wage matches, controls over computer software, computer center security, and security checks of computer personnel. The Board should improve its internal controls in these areas to (1) deter those with knowledge of benefit processing and computer operations from introducing fraudulent transactions, (2) reduce payment error, and (3) reduce administrative costs in correcting fraud and payment error.

Other Transportation-Related Matters

Other Transportation-Related Matters

Gasoline Marketing: States' Programs for Pump Labeling of Gasoline Ingredients

GAO/RCED-89-6, 1/12/89

Federal and state governments have some gasoline pump labeling requirements. GAO prepared and sent questionnaires to 56 state officials (in all 50 states, the District of Columbia, Puerto Rico, and 4 U.S. territories) to get their views on gasoline pump labeling practices. Of the 50 states, 39 responded that their states require retail gasoline stations to place labels on their pumps disclosing gasoline ingredients. The states have various enforcement penalties, such as fines, stop sales, and warnings, for pump labeling violations. States vary in the extent to which they enforce their requirements and programs.

Fuel Ethanol: Imports From Caribbean Basin Initiative Countries

GAO/NSIAD-89-106, 2/21/89

The Omnibus Trade and Competitiveness Act of 1988 requires GAO to examine fuel ethanol imports from Central America and the Caribbean and their impact on the U.S. fuel ethanol industry. Ethanol is the alcohol in beverages, such as beer, wine, and whiskey. It can also be blended with gasoline and used as a fuel. It can be made from renewable resources, such as corn, wheat, grapes, and sugarcane, through a process of fermentation. Legislation enacted in 1986 provides that, in 1989 and later years, ethanol qualifies for duty-free U.S. entry only if raw materials (feedstock) from the Caribbean Basin region account for at least 75 percent of the ethanol's value when it enters the United States. Given current sugar and gasoline prices, it is not economically feasible for Caribbean ethanol producers to meet this local feedstock requirement. They could be competitive at current prices only with no more than a 10-percent to 30-percent local feedstock requirement. GAO discusses options for modifying the 75-percent requirement.

Gasoline Marketing: States' Programs for Gasoline Octane Testing

GAO/RCED-89-91FS, 4/12/89

This fact sheet provides information on states' gasoline octane testing programs. Questionnaires were sent to 56 state officials, of whom 51

responded. Responses showed that 20 states have a gasoline octane testing program and 7 other states that do not have a testing program test octane in response to complaints. Officials from 13 states that do not have an octane testing program responded that they plan to recommend instituting a program within 3 years primarily because of consumer complaints. Eleven states responded that octane mislabeling is not a problem. Twenty-one states responded that they had no basis for judging whether a problem exists.

**Equal Employment Opportunity:
Actions Needed for FAA to Implement Committee Recommendations
in the Airline Industry**

GAO/HRD-89-100, 8/18/89

In late 1986 and early 1987, the Congress held hearings on allegations of discrimination against blacks in the airline industry. The House Committee on Government Operations later recommended that the Federal Aviation Administration (FAA) share responsibility with the Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) for enforcing affirmative action and equal employment opportunity in the airline industry. This report reviews the legal and administrative mechanisms under which FAA could assume an active oversight role, with OFCCP, as part of its regulation of the airline industry. GAO concluded that for this to happen, (1) the President would have to issue a new executive order, (2) the Congress would have to amend the rehabilitation and Vietnam era veterans' acts, and (3) the Congress would have to appropriate funds or provide for the transfer of staff and resources from OFCCP to FAA. The Department of Transportation, FAA, and OFCCP would also have to take several actions.

**Government Civilian Aircraft:
Central Management Reforms Are Encouraging but Require Extensive Oversight**

GAO/GGD-89-86, 9/29/89

Despite improvements in the policies and procedures for aircraft acquisition and use made as a result of earlier reports (some of which covered FAA- and Coast Guard-owned aircraft), GAO's follow-up work shows that many previously reported problems persist. For example, some agencies continue to own and routinely use administrative aircraft without determining whether commercial alternatives are less costly. GAO believes

that these continuing problems are caused by poor operating management practices, ambiguities in governmentwide guidance, ineffective central management leadership and oversight by the Office of Management and Budget (OMB) and the General Services Administration (GSA). In response to these findings, OMB and GSA have taken steps to provide a more complete governmentwide framework for correcting long-standing management problems. However, GAO believes that thorough, sustained oversight as well as additional central management actions by OMB and GSA are essential.

Insurance:

Profitability of the Automobile Lines of the Insurance Industry

GAO/GGD-90-4FS, 10/3/89

This fact sheet provides a series of tables on GAO's estimates of the profitability of the automobile insurance lines nationwide for the 10 years from 1978 through 1987. The tables focus on (1) the profitability of the property-casualty industry overall, including the automobile insurance lines, for the same 10-year period; (2) the top 20 automobile insurance companies ranked by net automobile insurance premiums written during 1987; and (3) the net premiums earned for the leading property/casualty insurance lines during 1987. GAO found that the auto insurance lines yielded an estimated after-tax profit of about \$22.6 billion between 1978 and 1987, despite underwriting losses of over \$30 billion. This profit reflected investment gains of about \$54 billion. For the same period, annual after-tax earnings as a percent of premiums averaged 4.6 percent. Annual after-tax earnings as a percent of earnings were, on average, 10.4 percent.

Air Pollution:

EPA's Efforts to Control Gasoline Vapors From Motor Vehicles

GAO/RCED-90-21, 10/6/89

Ozone, often called "smog," is a respiratory irritant, and long-term exposure to it may cause permanent lung damage. In 1988 over 100 areas, most of them major cities, had ozone levels exceeding the federal air quality standard for ozone. In 1987 the Environmental Protection Agency (EPA) proposed to control gasoline vapors, a major contributor to ozone, by requiring (1) refiners to lower the volatility (evaporation rate) of gasoline sold during the summer months when most high ozone levels occur and (2) motor vehicle manufacturers to install vapor recovery

equipment (onboard controls) on motor vehicles. In March 1989, EPA issued regulations that required the maximum volatility of gasoline sold during the summer to be reduced to 10.5 pounds per square inch beginning in 1989. EPA has not acted on its proposal to further reduce the maximum volatility to 9.0 pounds per square inch beginning in 1992. However, EPA's proposed 1992 level—9.0 pounds per square inch—is the same as the cap on summertime gasoline volatility that the President included in the proposed Clean Air Act amendments in June 1989 and the level to which GAO believes EPA remains committed. The proposed amendments to the Clean Air Act would also reverse EPA's onboard control proposal. Instead of onboard controls, vapor recovery equipment (called Stage II controls) would be required on service station pumps in areas that had not attained the ozone standard. Disagreement continues between EPA and the Department of Transportation (DOT) on the dangers of adding onboard controls to vehicles. DOT believes that the onboard controls may pose an increased risk of fire during crashes. EPA believes that onboard controls can actually improve motor vehicle safety by simplifying fuel system designs. GAO believes that the Stage II controls are, in the near term, a practical and feasible option for controlling refueling emissions. However, GAO also believes that despite the unresolved safety issues, the concept of onboard controls should not necessarily be abandoned as an option for controlling refueling emissions because, with their nationwide coverage, onboard controls may offer advantages beyond Stage II controls, which are basically a localized control.

Equal Employment Opportunity:

Women and Minority Aerospace Managers and Professionals, 1979-86

GAO/HRD-90-16, 10/26/89

The aerospace industry primarily produces aircraft, space vehicles, and missiles. In 1986 it employed on average 1.27 million workers nationwide. The House Education and Labor Committee, which has received many complaints over the years from aerospace industry employees about equal employment opportunity (EEO) matters, asked GAO to look at national EEO data on aerospace industry contractors. GAO found that minority groups and women increased slightly in aerospace industry employment between 1979 and 1986. During this period, however, Blacks, Hispanics, and Asians had less representation in all aerospace industry job categories than in the national EEO database. Asians doubled in representation (although remaining a small percentage), while the other minority groups progressed slightly. Although women in

aerospace made some gains between 1979 and 1986, they were less represented as managers and professionals than in the national EEO database. They were also paid less on average than white men. In 1986 white men comprised at least two-thirds of the employees in five of nine aerospace job categories nationwide (managers, craft workers, professionals, salespeople, and technicians). At the four aerospace firms that gave GAO salary data, the average salaries of male minority managers and professionals were less than those of white men from 1979 to 1987. GAO also discusses employment patterns for female and minority aerospace managers in Los Angeles and Seattle.

**Government Financial Vulnerability:
14 Areas Needing Special Review**

GAO/OCG-90-1, 1/23/90

The magnitude of the problems at the Department of Housing and Urban Development has fueled speculation about whether similar problems exist at other federal departments and agencies. GAO believes that unless something is done to stop the breakdowns plaguing the government's internal control and financial management systems, major losses of federal funds due to fraud and abuse will continue. Yet no mechanism exists to ensure that agencies take corrective action. GAO is beginning a special audit effort to identify areas likely to experience material losses and to ensure that corrective action is taken to stem or minimize the losses. GAO has compiled an initial list of 14 areas it intends to target. One of these areas is Urban Mass Transportation Administration grant:

**Status of Open Recommendations:
Improving Operations of Federal Departments and Agencies**

GAO/OP-90-1, 2/26/90

This annual report summarizes the findings and open recommendations resulting from GAO audits and other review work in federal department and agencies for which satisfactory legislative or administrative action have not been completed. To encourage prompt, responsive action on its recommendations, GAO systematically follows up on them. This report contains information on 1,595 GAO recommendations, including over 100 on transportation-related matters, that were open as of November 30, 1989.

**Impoundment Control:
President's Second Special Impoundment Message for FY 1990**

GAO/OGC-90-3, 3/16/90

On January 29, 1990, the President submitted to the Congress his second special impoundment message for fiscal year 1990. This message reports two new deferrals and revises the amounts of four deferrals previously reported. One of the deferrals relates to the Federal Aviation Administration's Facilities and Equipment account in its Airport and Airway Trust Fund. GAO reviewed these deferrals and found them to be in accordance with the Impoundment Control Act.

**Air Pollution:
EPA Needs More Data From FHWA on Changes to Highway Projects**

GAO/RCED-90-72, 3/20/90

How have the Environmental Protection Agency (EPA) and the Department of Transportation been addressing the impacts of transportation and highway programs on air pollution? In particular, concerns have been raised about the increasing impacts in such cities as Denver, Phoenix, and Los Angeles. This report addresses the implementation of the Clean Air Act requirement that federally funded highway projects conform to state implementation plans designed to reduce air pollution. Specifically, GAO examined how conformity was determined and what roles the Federal Highway Administration (FHWA) and EPA played in making this determination.

**Drug Testing:
Action by Certain Agencies When Employees Test Positive for
Illegal Drugs**

GAO/GGD-90-56FS, 4/6/90

On May 20, 1987, GAO testified on the Office of Personnel Management's guidelines for establishing a drug-free federal work place. GAO noted that because a wide range of penalties could be imposed under the guidelines, disciplinary actions could vary from agency to agency or even within an agency. The findings in this fact sheet confirmed GAO's earlier testimony. GAO visited three federal agencies—the Department of the Army, the Department of Transportation, and the Drug Enforcement Administration—to determine what action employers take when their

employees test positive for illegal drugs. Actions taken against employees ranged from firing them after the first positive testing to transferring them—without rehabilitation—to positions in which they were no longer subject to random testing.

**Gasoline Marketing:
Consumers Have Limited Assurance That Octane Ratings Are
Accurate**

GAO/RCED-90-50, 4/16/90

In 1978 the Congress passed the Petroleum Marketing Practices Act. This legislation requires uniform posting of accurate octane ratings on gas pumps to let consumers know the octane rating of the gasoline they are buying. However, because the Federal Trade Commission and the Environmental Protection Agency have not carried out their octane testing and enforcement responsibilities under the act, there are no federal controls to ensure that gasoline octane postings are accurate. Octane mislabeling is a problem in some states, and GAO believes that consumers may be paying millions of dollars each year for gasoline with a lower octane rating than that posted on the pump. GAO is also concerned that the act lacks provisions for posting octane ratings for gasoline-alcohol blends and has other provisions that may interfere with state octane enforcement efforts.

**Air Pollution:
Reliability of EPA's Mobile Source Emission Model Could Be
Improved**

GAO/RCED-90-138, 5/14/90

GAO examined the reliability of the Environmental Protection Agency's (EPA) mobile source emission facilitator model (MOBILE4) and the effect of budget constraints on its reliability. The model is used in estimating motor vehicle emissions of ozone precursors (hydrocarbons and nitrogen oxides) and carbon monoxide and in devising measures to reduce the atmospheric concentrations of these pollutants. GAO found that although MOBILE4 needs to be made more precise and reliable, it remains an important tool for formulating plans to reduce the atmospheric concentrations of ozone and carbon monoxide pollution. When its assumptions are revised to reflect changes in the vehicle fleet and other refinements resulting from additional emissions tests, the model should produce more precise estimates of motor vehicle emissions. Although funding

limitations hindered the development of MOBILE4, EPA has increased funding for emissions testing in fiscal years 1989 and 1990.

**Gasoline Marketing:
Uncertainties Surround Reformulated Gasoline as a Motor Fuel**

GAO/RCED-90-153, 6/14/90

Gasoline is considered reformulated when its chemical makeup has been changed for a specific purpose. In general, government and industry officials agree that use of reformulated gasoline could reduce vehicle emissions and thereby help improve air quality. In addition, reformulated gasoline offers advantages over other clean-burning alternative fuels because it can be distributed through the existing petroleum distribution system. Yet despite recent limited sales of reformulated gasoline to meet specific markets, the most effective formulations for reducing emissions have yet to be determined. Producing reformulated gasoline in large amounts and in more effective formulations would require at least several years' lead time and large investments in new refinery equipment. Industry officials also believe that producing reformulated gasoline could harm small refiners, increase the cost of gasoline to consumers, and require additional imports of crude oil. GAO believes that these uncertainties make it premature to draw conclusions about the potential of reformulated gasoline in comparison to other alternative fuels.

**Truck Transport:
Little Is Known About Hauling Garbage and Food in the Same Vehicles**

GAO/RCED-90-161, 6/28/90

In the spring of 1989, the press reported that trucks hauling garbage from New York and New Jersey to midwestern landfills had carried meat, poultry, and produce on their return trips. Many people reacted viscerally to this cross-hauling, regarding it as disgusting and health-endangering. GAO found only limited, anecdotal evidence on the extent of cross-hauling garbage and food and on the types of trucks and food-stuffs involved. It is clear, however, that the long-distance transport of garbage is increasing and that it originates primarily in northeastern communities that produce more garbage than they can dispose of locally. In these communities, the quantity of consumer goods, including food, arriving by truck exceeds the quantity of goods leaving; garbage

has therefore become a paying trucking commodity on what otherwise might be an empty return trip. Despite federal health and safety experts' contention that no food contamination in the United States has been linked to cross-hauling garbage and food, GAO found that no research has been done to determine the risk of such contamination. The food industry is responsible for ensuring that the trucks they use meet the cleanliness regulations of the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA). Yet these regulations do not include specific truck cleaning procedures or require records to be maintained that could identify trucks that have also hauled garbage. FDA and USDA inspectors do not test trucks for bacterial or chemical residues that may remain in a vehicle after it has hauled garbage because such tests would be too costly, complex, and time-consuming and because the inspectors have found no instances of contamination from cross-hauling. If a truck looks, smells, and feels clean, the inspectors consider it safe for food transport.

Air Pollution:

Air Quality Implications of Alternative Fuels

GAO/RCED-90-143, 7/9/90

What impact have alternative fuels like methanol, ethanol, liquified petroleum gas, reformulated gasoline, and others had on improving air quality? It is generally recognized that most alternative fuels will reduce such air pollutants as ozone, carbon dioxide, and air toxics. Debate continues, however, about the extent of these reductions and about the possibility that some alternative fuels may actually increase the levels of other pollutants. Although research has been done on the air quality implications of alternative fuels, the results reported by the Environmental Protection Agency (EPA) and by the petroleum and automobile industries vary. For example, while EPA estimates that alternative fuels could cut ozone-forming hydrocarbons by 80 percent or more, industry groups are less optimistic about the extent of these reductions.

Alcohol Fuels:

Impacts From Increased Use of Ethanol Blended Fuels

GAO/RCED-90-156, 7/16/90

Ethanol is an alcohol made from grain that can be blended with gasoline to extend petroleum supplies and increase gasoline octane levels. Congressional proposals to encourage greater use of alternative fuels could

increase the demand for ethanol. GAO evaluated the growth potential of the ethanol industry to meet future increases in demand and the impacts of increased production on American agriculture and the federal budget. GAO found that ethanol production could double or triple in the next 8 years and that American farmers could provide the corn for this increase in production. Although corn growers would benefit, some other agricultural segments would not. Soybean producers, for example, could face lowered demand and prices for soybean meal and soybean oil from increased production of protein-rich feed and corn oil (ethanol byproducts), and cattle ranchers would be faced with higher feed costs because of higher corn prices. Poultry farmers, however, might benefit from the lower cost of high-protein feeds. Overall net farm cash income would increase, and consumers would see slightly higher food prices. Federal budget impacts would include a reduction in federal farm program outlays by an annual average of between \$930 million (for double current production of ethanol) and \$1.421 billion (for triple production) during the 8-year growth period. However, because ethanol-blended fuels receive a partial tax exemption, federal fuel tax revenues could decrease by between \$442 million and \$813 million. GAO notes that the scope of its evaluation of federal budget impacts was limited to farm support programs and fuel taxes; other possible impacts were not analyzed.

Air Pollution:

EPA Not Adequately Ensuring Vehicles Comply With Emission Standards

GAO/RCED-90-128, 7/25/90

The nation's 157 million motor vehicles—122 million cars and 35 million light-duty trucks—are a major source of air pollution, mainly smog and carbon dioxide, which cause health problems. The Environmental Protection Agency (EPA) is required to establish programs to limit vehicles' contribution to air pollution. This report looks at the adequacy of EPA's efforts to (1) identify vehicles exceeding emission standards before and after the vehicles are sold to the public, (2) ensure that these vehicles are returned to compliance, and (3) monitor state programs to reduce motor vehicle emissions.

**Space Projects:
Improvements Needed in Selecting Future Projects for Private
Financing**

GAO/NSIAD-90-147, 9/21/90

To encourage private sector involvement in civilian space activities, the President's fiscal year 1990 budget proposed private financing for seven key projects in the space shuttle and space station programs. However, GAO found that efforts to spur commercial interest in the seven National Aeronautics and Space Administration (NASA) projects were generally unsuccessful because most of them were poor candidates for commercialization. (The Office of the Secretary of Transportation includes an Office of Commercial Space Transportation.) The projects were selected for commercialization and funds for them were removed from NASA's budget request before the likelihood of their success was adequately screened. NASA did compare the cost of private and government financing of the advanced solid rocket motor production facility and relied on this analysis in recommending approval of the private financing option. However, although most of the analysis was well done, it did not adequately address the government's exposure to possible increases in short-term commercial interest rates. In addition, the analysis included cases in which the private borrowing rate was assumed to be cheaper than the government's borrowing rate—an unlikely scenario.

**Oil Reserve:
Some Concerns Remain About SPR Drawdown and Distribution**

GAO/RCED-91-16, 11/28/90

The crisis in the Persian Gulf has renewed interest in the ability of the Department of Energy's (DOE) Strategic Petroleum Reserve to counter disruptions in the supply of oil to the United States. To provide this protection, DOE must be able to offset the lost supplies by quickly drawing down reserve oil from its storage sites and distributing it to purchasers. This report (1) reviews DOE's current and planned capability for removing oil from reserve sites and getting it to users via oil distribution networks, (2) examines the Strategic Petroleum Reserve's compliance with pipeline safety requirements, and (3) discusses DOE's efforts to correct problems that GAO previously reported. GAO concludes that a major distribution could be hampered because buyers of Strategic Petroleum Reserve oil are required to use U.S.-flag tankers to ship the oil between U.S. ports. DOE and industry officials doubt whether enough U.S.-flag

vessels are available to do the job, and questions remain about the efficiency of procedures to authorize the use of foreign vessels.

**Status of Open Recommendations:
Improving Operations of Federal Departments and Agencies**

GAO/OP-91-1, 1/16/91

This annual report summarizes the findings and open recommendations resulting from GAO audits and other work in federal agencies for which satisfactory legislative or administrative actions have not been completed. To encourage prompt, responsive actions on its recommendations, GAO follows up on them. This report contains information on 2,204 GAO recommendations, including over 140 on transportation matters, that were open as of September 30, 1990.

**Employee Drug Testing:
A Single Agency Is Needed to Manage Federal Employee Drug Testing**

GAO/GGD-91-25, 1/18/91

By Executive Order, each executive branch government agency is required to develop a plan to achieve a drug-free workplace. The plans were to include drug testing as a means of identifying illegal drug users among federal employees. GAO visited 18 government agencies, including the Department of Transportation, to assess the implementation of drug testing programs. GAO's review confirmed the existence of inequities in the treatment of employees and disparities in drug testing practices. Employees in some agencies were tested while those in others were not. Proportions and definitions of employees subject to testing varied widely, costs ranged from \$8.90 per test to more than \$87, and a number of operational problems have not been identified and dealt with. GAO believes that a single agency should oversee governmentwide drug testing practices to ensure that employees are treated equitably, to identify agencies that are not in compliance with program guidelines, and to see that needed modifications to the program are identified and made. Three agencies—the Office of Personnel Management (OPM), the Department of Health and Human Services, and the Office of National Drug Control Policy—are likely candidates for the job, although in GAO's view OPM is in the best position to assume this responsibility.

**Gasoline Marketing:
Premium Gasoline Overbuying May Be Occurring, but Extent
Unknown**

GAO/RCED-91-58, 2/26/91

Are consumers needlessly buying higher priced premium unleaded gasoline for their cars when regular unleaded gasoline would meet their needs? Does the higher price of premium gasoline include a price markup added between the refinery and the retail pump that is greater than that included in the retail price for regular gasoline? What are the possible reasons for the price differences between premium and regular gasoline? Although not conclusive, indications are that consumers may be overbuying premium gasoline. For example, both government and industry studies show that premium gasoline sales, as a percentage of gasoline sales, exceed the percentage of vehicles on the road that require premium gasoline. In analyzing nationwide averages of gas sales along with retail and refiners' prices, GAO found that the price difference between premium and regular gasoline established at the refinery was about the same as the price difference between the two grades of gasoline set at the retail pump. Two factors that contribute to the higher price of premium over regular gasoline are the costs of additional processing to increase the octane level and the cost of more or better additives that may be included in premium gasoline.

**Meeting the Energy Challenges of the 1990s:
Experts Define the Key Policy Issues**

GAO/RCED-91-66, 3/91

On July 10 and 11, 1990, GAO sponsored a conference to examine emerging issues in five areas associated with energy policy: energy supply and demand, energy and the environment, management challenges at the Department of Energy (DOE), DOE's nuclear weapons complex, and energy research and development. Transportation-related issues discussed included alternative fuels programs, a flexible fuel vehicle, and reduction of exhaust emissions. To elicit a wide range of perspectives, GAO invited representatives from government, industry, research institutions, and citizens' groups to assess the challenges. The conference not only provided GAO with a framework for its future work on the energy issues, but also raised points for consideration by legislators, government agencies, industry decisionmakers, and others concerned with energy policy.

**International Trade:
Easing Foreign Visitors' Arrivals at U.S. Airports**

GAO/NSIAD-91-6, 3/8/91

The number of foreign visitors to the United States has grown significantly in recent years, and foreign tourism today is a major U.S. industry. In 1989 receipts generated from foreign visitors to the United States—about \$43.8 billion—exceeded receipts gained for any U.S. export. However, airline officials and others have reported that foreign visitors arriving at international airports are burdened with lengthy entrance procedures and that foreign visitor orientation services are inadequate. This report looks at (1) the federal inspection process, (2) airport services and facilities, and (3) projects to improve visitor facilitation. Among GAO's recommendations is that the Secretary of Transportation request that the National Transportation Facilitation Committee design a comprehensive model plan for providing quality airport services and facilities for foreign visitors and that this model plan be completed within 12 months.

Testimony

Fuel Ethanol: Imports From Caribbean Basin Initiative Countries, by Allan I. Mendelowitz, Director of International Trade, Energy, and Finance Issues, before the Subcommittee on Trade, House Committee on Ways and Means. GAO/T-NSIAD-89-26, 4/25/89

This testimony summarizes GAO's 2/21/89 report entitled Fuel Ethanol: Imports From Caribbean Basin Initiative Countries (GAO/NSIAD-89-106), which is described above.

Investment in Foreign Aerospace Vehicle Research and Technological Development Efforts, by Harry R. Finley, Director of Air Force Issues, before the Subcommittee on Transportation, Aviation, and Materials, House Committee on Science, Space, and Technology, and the Subcommittee on Research and Development, House Committee on Armed Services. GAO/T-NSIAD-89-43, 8/2/89

In an April 1988 report (GAO/NSIAD-88-122, 4/27/88), GAO concluded that although the \$3.3 billion National Aero-Space Plane (NASP) Program was technologically challenging and a high-risk program, its potential payoffs were also high. In addition, GAO reported that the United Kingdom, France, West Germany, the Soviet Union, and Japan were

each also developing technologies for their own concept of an operational plane. This testimony provides the preliminary results of GAO's review of these countries' aerospace investment. It also provides information on aerospace test facilities (such as wind tunnels) in the Netherlands, Belgium, Italy, and Australia, which are being used to conduct research and development of air-breathing aerospace vehicles.

The Budget Treatment of Trust Funds, by Charles A. Bowsher, Comptroller General of the United States, before the Subcommittee on Legislation and National Security, House Committee on Government Operations, GAO/T-AFMD-90-1, 10/12/89; and before the Senate Committee on Governmental Affairs and the Senate Committee on the Budget, GAO/T-AFMD-90-3, 10/18/89

Widely different programs appear in the budget as trust fund programs. These range from discretionary programs, such as those of the Highway Trust Fund, to entitlement programs, such as those in the two Social Security trust funds. In these testimonies, the Comptroller General discussed the budget treatment of trust funds and, in particular, whether the Social Security surpluses should be included in the budget totals subject to deficit reduction actions. Although GAO supports the unified budget, it is concerned about the use of the trust fund surpluses, especially the rapidly growing Social Security surpluses, to offset the deficit. This practice leaves the impression that the deficit problem is being corrected when, in fact, it is getting worse. GAO suggests that rather than excluding some or all of the trust funds from the budget, the budget report the funds in three major components—general, trust, and enterprise funds—and show separate budget subtotals for each, thereby unmasking the effects of trust fund surpluses on the overall totals and permitting more deficit reduction options. In addition to a budget goal for the overall budget, as seen in the Gramm-Rudman-Hollings legislation, a separate goal for each major component could reflect a legislative decision on the appropriate deficit reduction or surplus path for each of the three areas.

Women and Minority Aerospace Industry Profile, 1979-1986, by Linda G. Morra, Director of Intergovernmental and Management Issues, before the House Committee on Education and Labor. GAO/T-HRD-90-4, 11/3/89

This testimony summarizes GAO's 10/26/89 report entitled Equal Employment Opportunity: Women and Minority Aerospace Managers and Professionals, 1979-86 (GAO/HRD-90-16), which is described above.

Perspectives on Potential Agricultural and Budgetary Impacts From an Increased Use of Ethanol Fuels, by Judy A. England-Joseph, Associate Director for Energy Issues, before the House Committee on Ways and Means. GAO/T-RCED-90-23, 2/1/90

GAO testified on its use of an econometric model to assess the effects of expanded ethanol production in this country. Its conclusions were that expanded use of fuels would financially benefit some sectors of agriculture, increase consumer food costs, decrease federal farm program outlays, and reduce federal motor fuel tax revenues. GAO's study was not designed to reach a conclusion on whether to extend the ethanol fuel tax exemption or the income tax credit for fuel blenders, and GAO does not take a position on these matters. GAO believes, however, that other factors not addressed in its study, including important environmental, energy security, and economic growth consequences attributable to the use of ethanol as a fuel or a fuel blend, need to be factored into the debate on ethanol tax issues.

Adequacy of the Regulatory Oversight of the Trans-Alaska Pipeline and Terminal, by James Duffus III, Director of Natural Resources Management Issues, before the Subcommittee on Water, Power and Offshore Energy Resources, House Committee on Interior and Insular Affairs. GAO/T-RCED-90-55, 3/29/90

The Exxon Valdez spill abruptly brought to the public's attention the risks of transporting crude oil. Although oil tanker transportation received many of the headlines, the safety of pipelines carrying oil and of the terminals that store it have also been called into question. GAO testified on the adequacy of regulatory oversight of the 800-mile Trans-Alaska Pipeline System (TAPS) and the terminal at Valdez, Alaska. (The Office of Pipeline Safety in the Department of Transportation's Research and Special Programs Administration is responsible for overseeing the operational safety of all interstate pipelines and some intrastate pipelines, including TAPS.) GAO sees increased and coordinated regulatory oversight as a major component of an effective operational and emergency response strategy for the pipeline. The current lack of comprehensive and systematic oversight is of particular concern because of recent discoveries of significant corrosion problems in the pipeline.

Consumers Have Limited Assurance That Octane Ratings Are Accurate, by Victor S. Rezendes, Director of Energy Issues, before the Subcommittee on Energy and Power, House Committee on Energy and Commerce. GAO/T-RCED-90-90 and GAO/T-RCED-90-90A, 6/20/90

When choosing gasoline, consumers rely on the octane ratings posted at the pumps. However, consumers have little assurance that they are getting the octane that they are paying for. GAO found that octane mislabeling does exist, although the extent of the problem nationwide is unknown. Although the Congress passed the Petroleum Marketing Practices Act in 1978 to ensure the accuracy of gasoline octane ratings posted nationwide, no federal controls are now in place to monitor the accuracy of octane postings. Further, there is (1) doubt that newer gasoline-alcohol blended fuels are subject to octane posting requirements and (2) concern in the states that provisions of existing federal law may limit state enforcement efforts.

Major Issues Facing the 102nd Congress, by Charles A. Bowsher, Comptroller General, before the Senate Committee on Governmental Affairs. GAO/T-OCG-91-1, 1/23/91

GAO's 1988 transition series sought to alert the President-elect and the new Congress to the many challenges facing the nation. This testimony updates the status of the issues GAO cited in 1988. Transportation is one of the program areas the Comptroller General discusses as having critical policy problems. These problems include the need to come to grips with an overstretched and deteriorating transportation infrastructure and the cost, schedule, and performance problems faced by the Federal Aviation Administration's air traffic control modernization program.

Employee Drug Testing: A Single Agency Is Needed to Manage Federal Employee Drug Testing, by Bernard L. Ungar, Director of Federal Human Resource Management Issues, before the Subcommittee on Treasury, Postal Service, and General Government, Senate Committee on Appropriations. GAO/T-GGD-91-6, 2/19/91

This testimony summarizes GAO's 1/18/91 report entitled Employee Drug Testing: A Single Agency Is Needed to Manage Federal Employee Drug Testing (GAO/GGD-91-25), which is described above.

Progress Made Implementing the Alternative Motor Fuels Act of 1988,
by Judy A. England-Joseph, Associate Director for Energy Issues, before
the Subcommittee on Energy and Power, House Committee on Energy
and Commerce. GAO/T-RCED-91-44, 4/25/91

Since 1988 much has happened that has heightened interest in developing alternative transportation fuels. The Clean Air Act Amendments of 1990, the Department of Energy's (DOE) development of a national energy strategy, and the Persian Gulf War have all led to increased attention on the need to promote alternative fuels. This testimony discusses DOE's slower-than-anticipated progress in implementing four of the Alternative Motor Fuels Act's major provisions: (1) the federal light-duty vehicle demonstration program, (2) the corporate average fuel economy credits for the manufacture of alternative-fueled vehicles, (3) the commercial application program to study the use of alternative fuels in heavy-duty trucks, and (4) the alternative-fueled bus testing program. DOE has experienced problems in procuring the quantity, types, and size of alternative-fueled vehicles it desired and in placing them in all locations needed for testing purposes. These problems will likely persist in future years for several primary reasons: higher than anticipated vehicle costs, technological readiness problems, and lack of widespread refueling capability. As a result, DOE could be hampered in its ability to meet the act's objective of encouraging the development, production, and widespread use of alternative-fueled vehicles.

Special Publications

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Transportation:

Bibliography of GAO Documents, January 1985 - December 1988

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This bibliography includes information on GAO documents directly or indirectly related to transportation that were issued from January 1985 through December 1988. Included are reports, speeches, testimonies, decisions, and other documents. An index section classifies information by subject, agency or organization, congressional affiliation, and document number. A citation section briefly describes the documents and often includes an informative abstract.

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